

TELE RADIO AB

REMOTE CONTROL

Installationsmanual System 840/850	Sida	2
Viktigt		2
Installation		2
Uppstart/Avstängning av sändaren		3-4
Laddning av sändare		4
Ändring av frekvens		5
8516 mottagarens olika lysdioder/omkopplare och förregling/programval		6-9
8409 mottagarens olika lysdioder/omkopplare och förregling/programval		10-12
Inställning av reläfunktionerna		12-13
Kodning		13
Felsökning		14
Orderinformation/Godkännanden		28

Installation manual System 840/850	Page	15
Important		15
Installation		15
Starting/shutting down the transmitter		16-17
Charging the transmitter		18
Changing the frequency		18
8516 receiver's various LED indications/switches and interlocking/program		19-22
8409 receiver's various LED indications/switches and interlocking/program		23-25
Relay function adjustment		25-26
Coding		26
Troubleshooting		27
Orderinformation/Approvals		28

IMPORTANT!

Read through this information before you install the equipment. If radio operation is to function reliably for a long period of time, it is most important that the radio receiver and antenna is properly installed. Correctly installed equipment not only provides a better transmission/reception range but also a longer lifetime. It will pay you to spend a few minutes reading through these instructions.

Installation

If the radio operation is to function well for a long time, it is most important that the receiver and antenna are placed correctly.

There are three different types of antenna to choose from, 1/2-wavelength antenna, 5/8-wavelength antenna and a 1/4 wavelength dipole antenna.

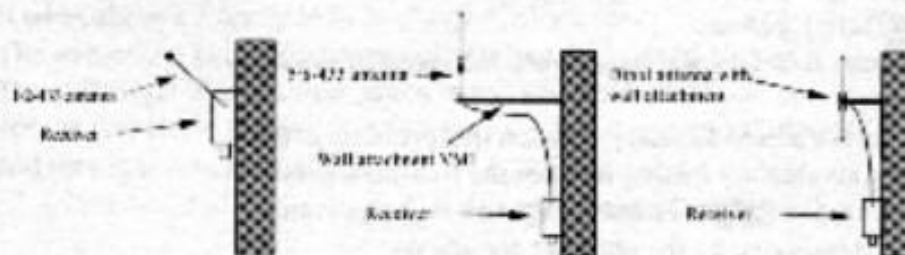
Note the following points when installing the radio equipment:

- Place the antenna high above the ground.
- Keep the antenna as far as possible away from other metal objects, e.g., girders, electric cables and other antennas.
- Protect the receiver as far as possible from wind and weather.

The 1/2 wave antenna is a good choice when it is not possible to mount a big antenna. A big advantage is also that the antenna is not depending on a ground plane. Use this antenna when it is not possible to mount an antenna on a tin roof or on a roof of a vehicle. If the receiver is mounted to a wall, the antenna should be angled from the wall (see fig.).

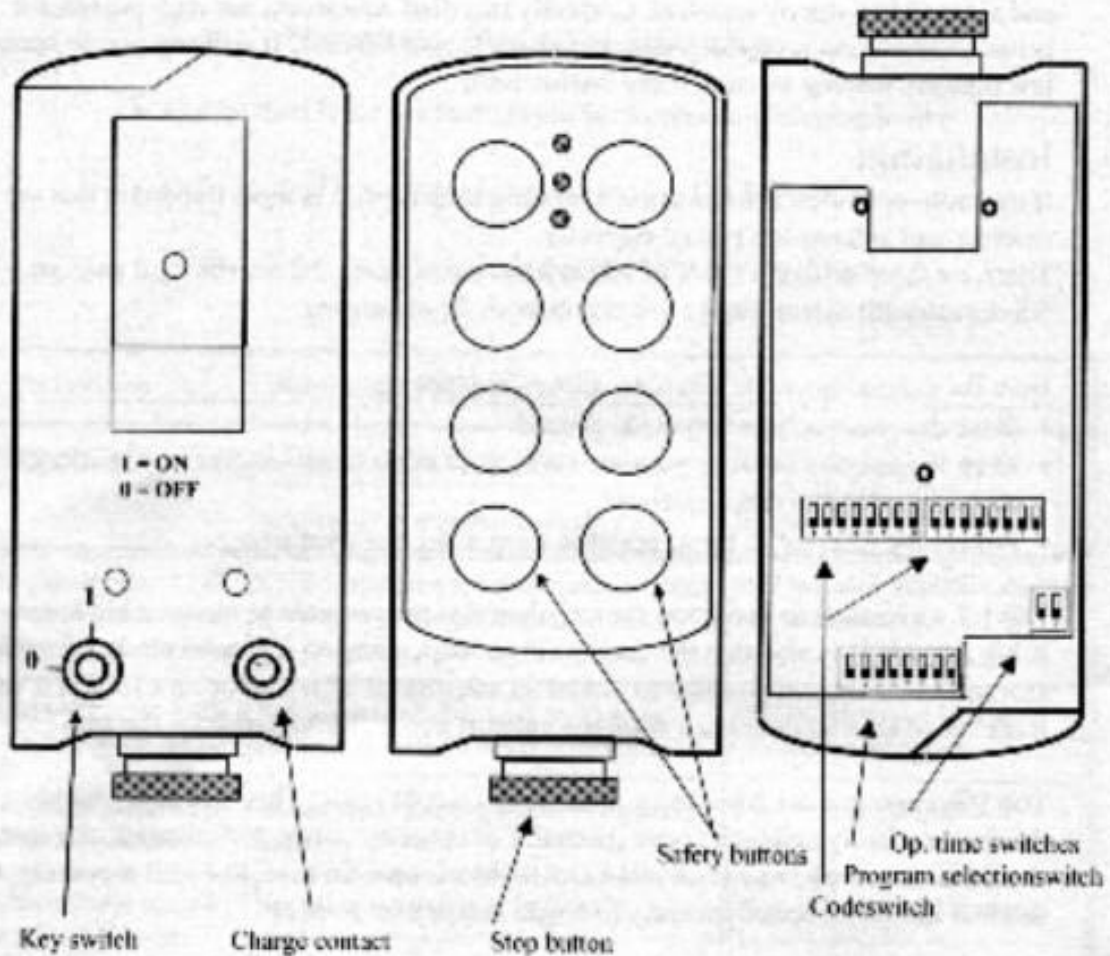
The 5/8-wave antenna has a three metre long coaxial cable. This makes it possible to place the antenna freely and well above ground. For optimum range performance, the antenna should be mounted away from other metal objects on a tin roof. For wall mounting, the antenna should be bolted securely to a wall attachment (VM1).

The Dipole antenna has a three metre long coaxial cable this makes it possible to place the antenna freely and well above ground. For optimum range performance, the antenna should be mounted away from other metal objects. The Dipole antenna has it own ground plane and is provided with wall attachment.



Transmitter

The standard transmitter has 8 two-step pushbuttons, 1 stop button and 1 key power-switch.



Starting-up the transmitter

1. Key power switch in the ON position.
2. Stop button pulled out.
3. Depress both safety buttons (7 and 8) at the same time for at least 1 second.
4. Release the safety buttons.
5. The transmitter is in function status when the green LED comes on.

The transmitter has a built-in safety function that prevents another functions from involuntary cutting-in when the transmitter starts. The transmitter will not start if a button is stuck in the activated position. This is indicated by the red LED coming on.

Shutting-down the transmitter

To shut-down the transmitter, push in the stop button.

Automatic switch-off

The transmitter has an automatic shut-down function in order to spare the battery capacity. This means that the transmitter shuts down after a pre-set time from when the final command has been given.

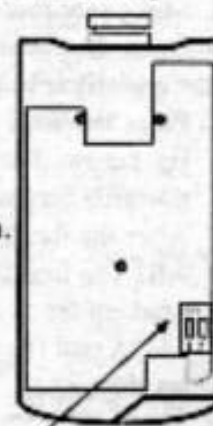
The automatic shut-down function is programmed as follows:

Breaker 1 in pos. ON – Transmitter shuts itself down after 2 min.

Breaker 2 in pos. ON – Transmitter shuts itself down after 6 min.

Breakers 1,2 in pos. ON – Transmitter shuts itself down after 12min.

Breakers 1,2 in pos.OFF– Transmitter does not shut itself down until the stop button has been pushed in.



Op. time switches

The transmitter is delivered with the automatic shut-down function off, that is, breakers 1 and 2 in position OFF.

N.B.! The transmitter can always be shut down by pushing in the stop button.

Charging the transmitter

The transmitter is delivered with a built-in charger, chargeable batteries and an adapter for charging.

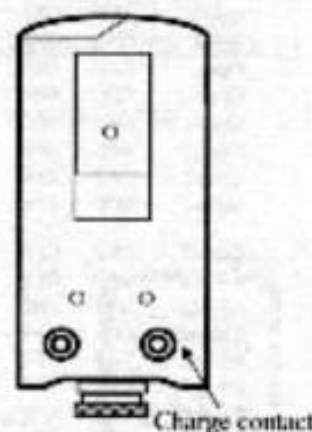
Battery charge status is indicated by the LED light in the transmitter: red - batteries need charging; green - batteries fully charged. During the charging of the transmitter batteries, the LED lights red until the batteries are fully charged, at which time the light changes to green.

The transmitter batteries cannot be overcharged.

It takes about 1.5 hours to fully charge the batteries.

The transmitter can run continuously for about 12 hours.

The LED light changes from green to red when there is about 10% power left in the batteries (1 hour continuous operation remains), and then it is time to re-charge.

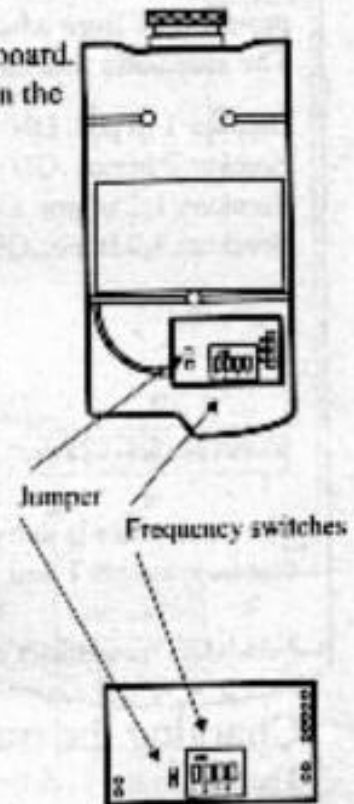


12 VDC

Changing the frequency

With System 850 you can choose to transmit on 32 (16+16) different frequencies. The 32 different frequencies enable you to control, e.g., 32 different objects (traverses) in one and the same direction but entirely independent of one another, that is, without interfering or influencing the other systems.

1. Make sure that the transmitter is switched off.
2. Open the transmitter and the receiver.
3. Carefully lift up the receiver's radio module from the circuit board.
4. Place the units (receiver and transmitter modules) as shown in the fig. below. The frequency breakers on both the units point upwards for the ON position.
5. Alter the frequency switches to the desired frequency.
NB! The frequency must be the same in both units.
6. Start-up the system.
7. Check that the relays close when the transmitter buttons are depressed.
8. Screw together the transmitter and the receiver.



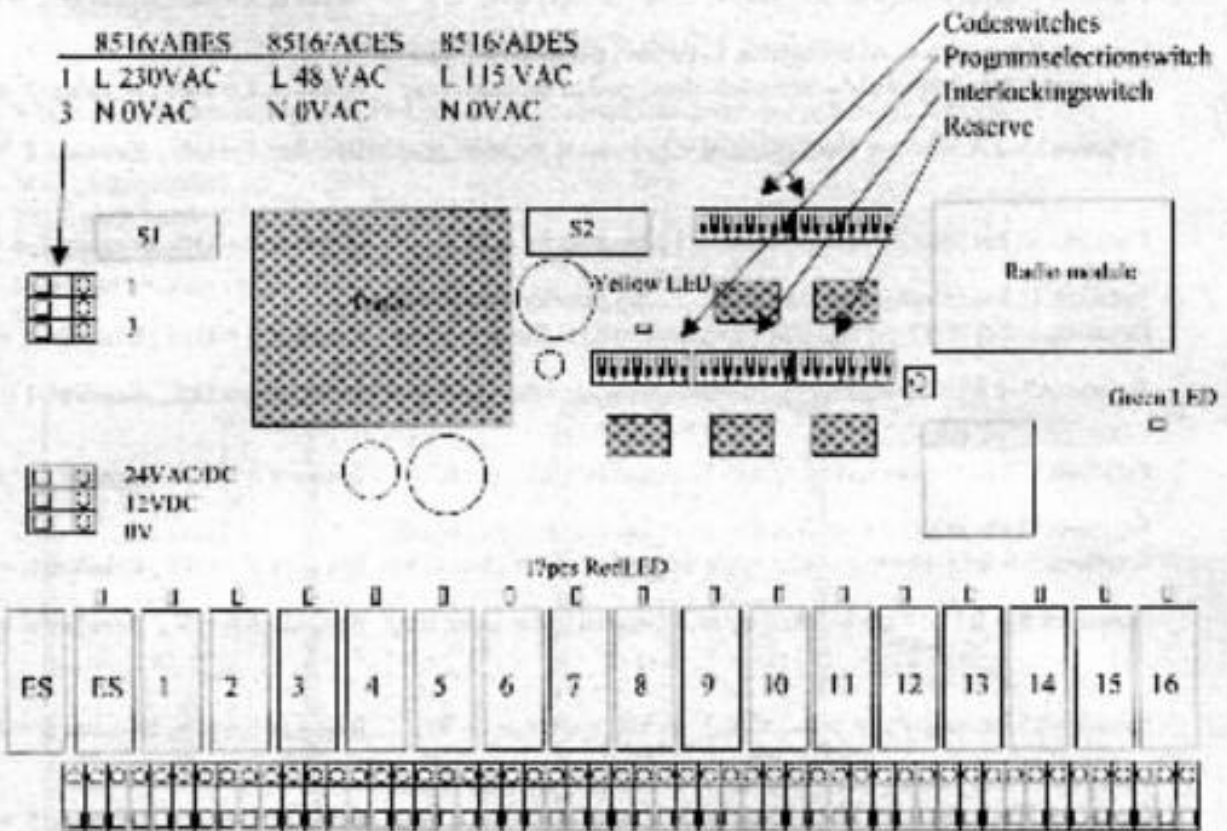
Jumper	1	2	3	4	Channel	Frequency
Open	OFF	OFF	OFF	OFF	1	434.650 MHz
Open	ON	OFF	OFF	OFF	2	434.600 MHz
Open	OFF	ON	OFF	OFF	3	434.550 MHz
Open	ON	ON	OFF	OFF	4	434.500 MHz
Open	OFF	OFF	ON	OFF	5	434.450 MHz
Open	ON	OFF	ON	OFF	6	434.400 MHz
Open	OFF	ON	ON	OFF	7	434.350 MHz
Open	ON	ON	ON	OFF	8	434.300 MHz
Open	OFF	OFF	OFF	ON	9	434.250 MHz
Open	ON	OFF	OFF	ON	10	434.200 MHz
Open	OFF	ON	OFF	ON	11	434.150 MHz
Open	ON	ON	OFF	ON	12	434.100 MHz
Open	OFF	OFF	ON	ON	13	434.050 MHz
Open	ON	OFF	ON	ON	14	434.000 MHz
Open	OFF	ON	ON	ON	15	433.950 MHz
Open	ON	ON	ON	ON	16	433.900 MHz
Closed	OFF	OFF	OFF	OFF	17	434.625 MHz
Closed	ON	OFF	OFF	OFF	18	434.575 MHz
Closed	OFF	ON	OFF	OFF	19	434.525 MHz
Closed	ON	ON	OFF	OFF	20	434.475 MHz
Closed	OFF	OFF	ON	OFF	21	434.425 MHz
Closed	ON	OFF	ON	OFF	22	434.375 MHz
Closed	OFF	ON	ON	OFF	23	434.325 MHz
Closed	ON	ON	ON	OFF	24	434.275 MHz
Closed	OFF	OFF	OFF	ON	25	434.225 MHz
Closed	ON	OFF	OFF	ON	26	434.175 MHz
Closed	OFF	ON	OFF	ON	27	434.125 MHz
Closed	ON	ON	OFF	ON	28	434.075 MHz
Closed	OFF	OFF	ON	ON	29	434.025 MHz
Closed	ON	OFF	ON	ON	30	433.975 MHz
Closed	OFF	ON	ON	ON	31	433.925 MHz
Closed	ON	ON	ON	ON	32	433.875 MHz

NB!
Channel 1-16 should be used first.

When you use channel 17-32, you have to solder the jumper.

Receiver 8516 various LED indications

- Yellow LED lights when receiver has correct feed voltage.
- Green LED lights when receiver accepts radio signals.
- Each relay has a red LED that lights when the relay closes.



The receiver is delivered as standard with 18 relays, 2 of which are used for the stop function.

Interlocking

Interlocking is programmed in the receiver on interlock switches. Interlocking is usable/necessary for applications that have up/down or right/left functions.

On delivery, the interlocking is disconnected, that is, all breakers are in position OFF.

See next page.



Interlocking

Interlockingswitch



Function 9 has priority over function 1. 10 has priority over 2. **Breaker 1 = ON, Breaker 2 = OFF**

Function 9 has priority over function 1. 10 has priority over 2 and functions 1-2 & 9-10 are blocked when depressed at the same time. **Breaker 1 = OFF, Breaker 2 = ON**

Functions 1-2 & 9-10 are blocked when depressed at the same time. **Breaker 1 = ON, Breaker 2 = ON**

Function 11 has priority over function 3. 12 has priority over 4. **Breaker 3 = ON, Breaker 4 = OFF**

Function 11 has priority over function 3. 12 has priority over 4 and functions 3-4 & 11-12 are blocked when depressed at the same time. **Breaker 3 = OFF, Breaker 4 = ON**

Functions 3-4 & 11-12 are blocked when depressed at the same time. **Breaker 3 = ON, Breaker 4 = ON**

Function 13 has priority over function 5. 14 has priority over 6. **Breaker 5 = ON, Breaker 6 = OFF**

Function 13 has priority over function 5. 14 has priority over 6 and functions 5-6 & 13-14 are blocked when depressed at the same time. **Breaker 5 = OFF, Breaker 6 = ON**

Functions 5-6 & 13-14 are blocked when depressed at the same time. **Breaker 5 = ON, Breaker 6 = ON**

Function 15 has priority over function 7. 16 has priority over 8. **Breaker 7 = ON, Breaker 8 = OFF**

Function 15 has priority over function 7. 16 has priority over 8 and functions 7-8 & 15-16 are blocked when depressed at the same time. **Breaker 7 = OFF, Breaker 8 = ON**

Functions 7-8 & 15-16 are blocked when depressed at the same time. **Breaker 7 = ON, Breaker 8 = ON**

Example: We have a traverse where functions 1-2 and 9-10 must never be activated at the same time. Breakers 1 and 2 are then set in position ON.

On delivery the interlocking is disconnected, that is, all breakers are in position OFF.

Program selection for receiver 8516

This selection is made in the transmitter (program selector, see pages 21-22).

Programselectionswitch



Program selection 1: Switch 1=ON, switch 2=OFF (7 dubbelfunctions with two load selections).

Program selection 2: Switch 1=OFF, switch 2=ON (7+7 singel functions).

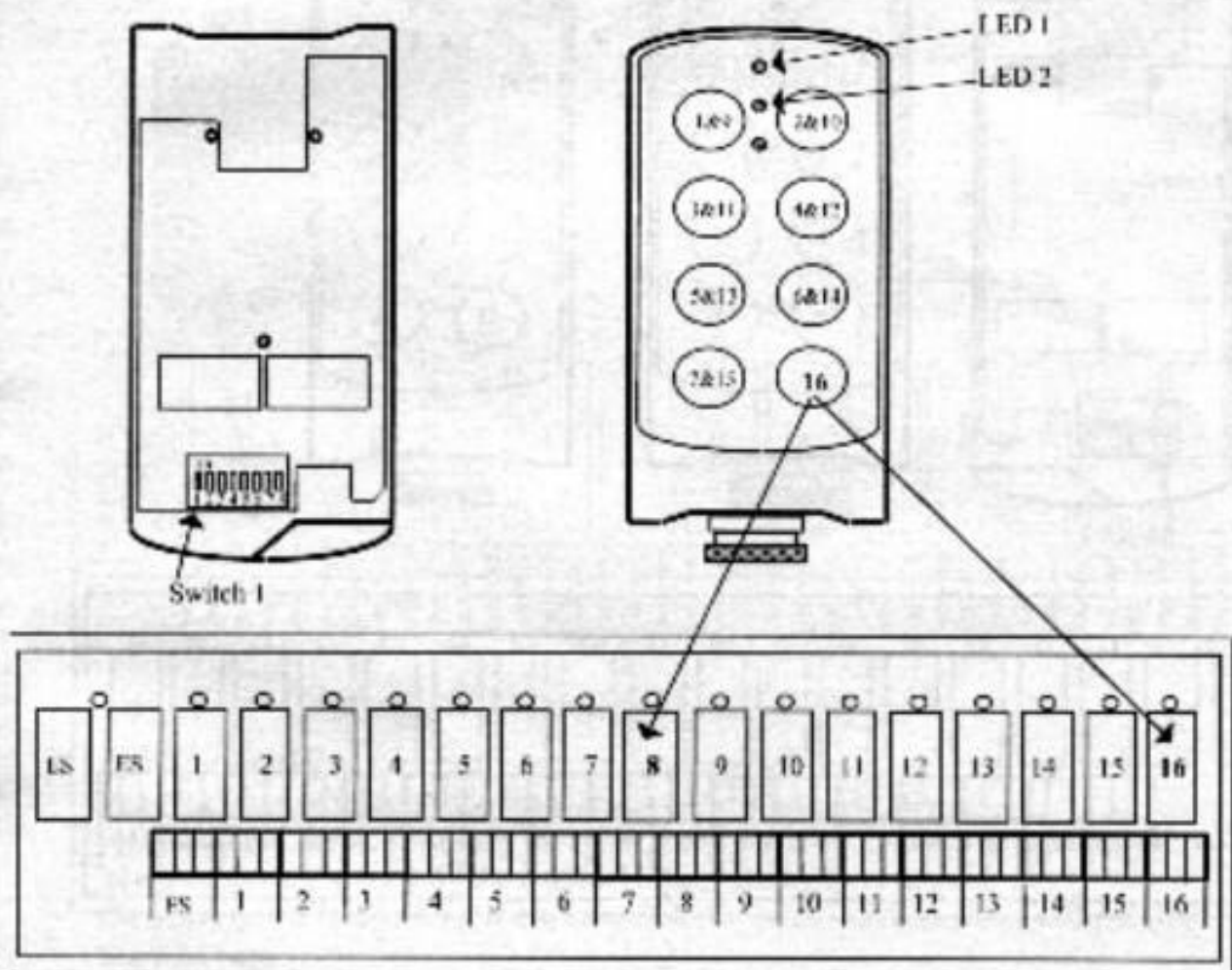
Program selection 1 for receiver 8516

The transmitter can be programmed so that relay 8 and 16 have a change-over function. This function is selected by placing switch 1 to ON and switch 2 OFF (see figure below). Relay status is indicated by two light emitting diodes (LEDs) on the transmitter. When this function is selected, the other position (push button 8) is disconnected on the transmitter. The receiver will be set up automatically.

When the transmitter is delivered switch 1 and 2 are in the OFF position.

When push button 16 is pressed for at least 0.5 seconds the functions will be as follows:

	<u>Relay 8 + LED 1</u>	<u>Relay 16 + LED 2</u>
Start of transmitter	ON	OFF
Press push button 16	OFF	ON
Press push button 16	ON	ON
Press push button 16	ON	OFF
Etc		

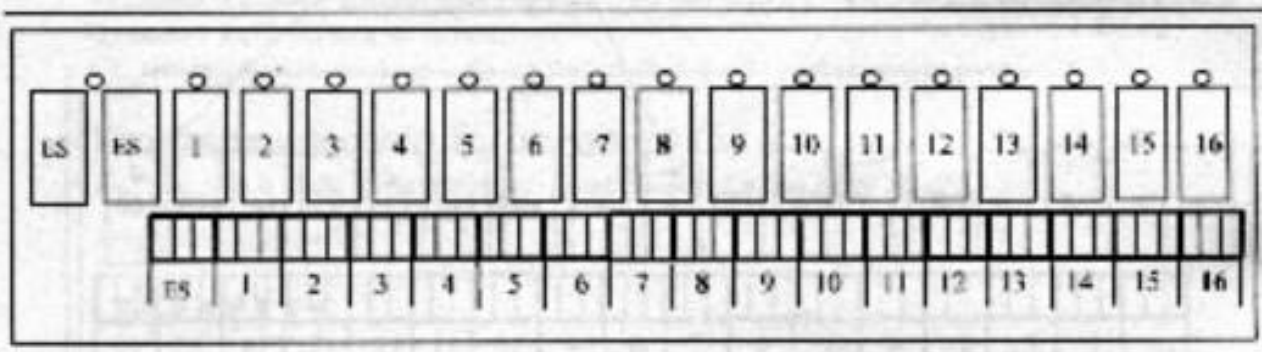
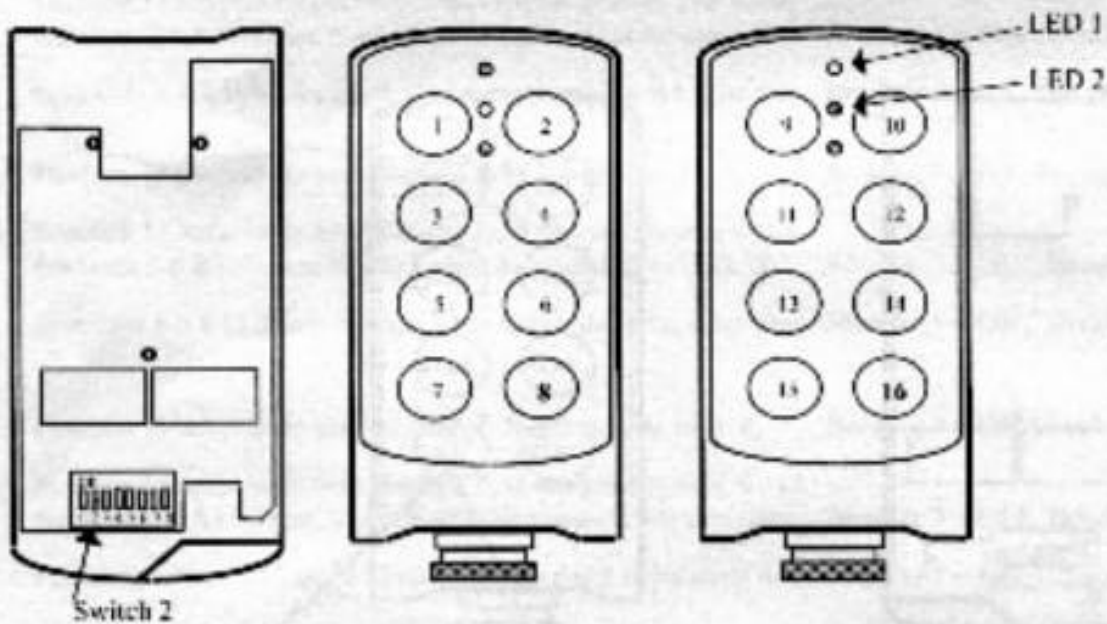


Program selection 2 for receiver 8516

The transmitter can be programmed so that the second step in the push buttons is disconnected. With button 16 you can choose the 7 first functions or the 7 last functions. (7+7 functions). The status is indicated by two light emitting diodes (LEDs) on the transmitter. The receiver will be set up automatically. When the transmitter is delivered switch 1 and 2 are in the OFF position.

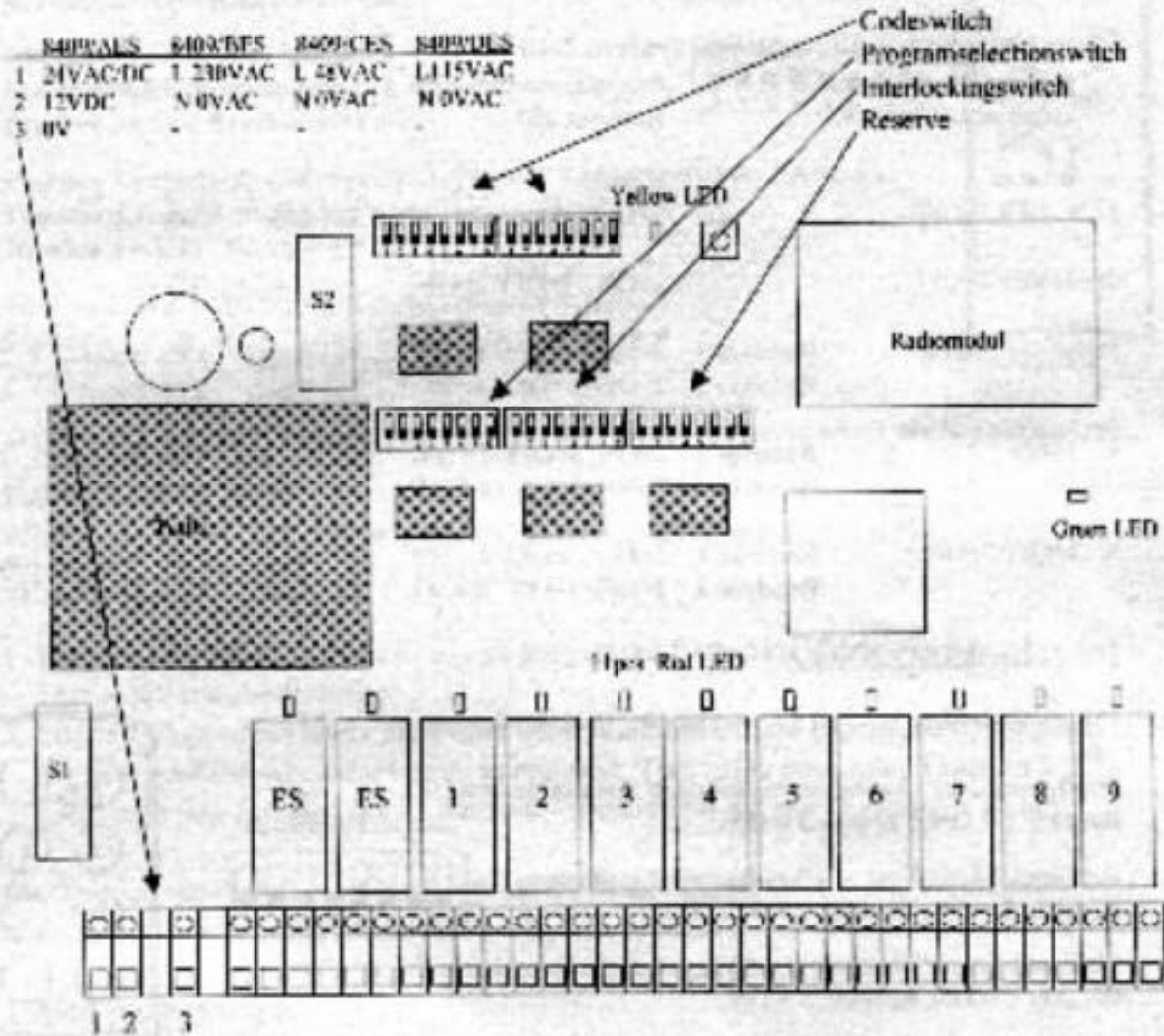
When push button 16 is pressed for at least 0,5 seconds the functions will be as follows:

	Relay 8 - LED 1	Relay 16 - LED 2	Function
Start of transmitter	ON	OFF	Button 1-7 = Relay 1-7
Press push button 16	OFF	ON	Button 1-7 = Relay 9-15
Press push button 16	ON	OFF	Button 1-7 = Relay 1-7
Etc			



Receiver 8409 various LED indications

- Yellow LED lights when receiver has correct feed voltage.
- Green LED lights when receiver accepts radio signals.
- Each relay has a red LED that lights when the relay closes.



Interlocking

Interlocking is programmed in the receiver on interlock switches.

Interlocking is usable/necessary for applications that have up/down or right/left function

The interlocking is made by the interlockingswitch (see figure above).

On delivery, the interlocking is disconnected, that is, all breakers are in position OFF.

See next page.

Twin function system 840

Twin function makes it possible to control two different 840 receivers with one transmitter. The selection of receivers is made by push button 16 for at least 0,5 seconds. Which receiver you select are indicated by two light emitting diodes (LEDs) on the transmitter. NB! The codeswitch in the two receivers must be the same.

Programselector alternatives system 840

Programselector switch Transmitter 808x2-RF	Programselector switch Receiver 840	Function	Twinfunction
Breaker	Breaker		
1. 1-OFF 2-OFF	2-OFF 3-OFF 4-OFF	8x1 func.	NO
2. 1-OFF 2-OFF	2-ON 3-OFF 4-OFF	4x2+1 func.	NO
3. 1-ON 2-OFF	Receiver 1 2-OFF 3-OFF 4-OFF Receiver 2 2-OFF 3-ON 4-ON	8x1 func. 8x1 func.	YES Receiver 1, 2, 1+2 YES Receiver 1, 2, 1+2
4. 1-ON 2-OFF	Receiver 1 2-ON 3-OFF 4-OFF Receiver 2 2-ON 3-ON 4-OFF	4x2+1 func. 4x2+1 func.	YES Receiver 1, 2, 1+2 YES Receiver 1, 2, 1+2
5. 1-OFF 2-ON	Receiver 1 2-OFF 3-OFF 4-OFF Receiver 2 2-OFF 3-ON 4-OFF	8x1 func. 8x1 func.	YES Receiver 1 or 2 YES Receiver 1 or 2

Interlocking 8409

Programselection 1, 3 and 5 / Interlocking (8 single functions)

Functions 1,2 are blocked when depressed at the same time.

Breaker 1 = ON, Breaker 2 = ON.

Functions 3,4 are blocked when depressed at the same time.

Breaker 3 = ON, Breaker 4 = ON.

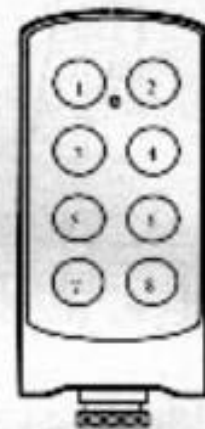
Functions 5,6 are blocked when depressed at the same time.

Breaker 5 = ON, Breaker 6 = ON.

Functions 7,8 are blocked when depressed at the same time.

Breaker 7 = ON, Breaker 8 = ON.

Interlocking switch



Programselection 2 and 4 / Interlocking (4 doublefunctions + 1 singlefunction)

Function 5 has priority over function 1.

Function 6 has priority over function 2.

Breaker 1 = ON, Breaker 2 = OFF.

NB! Continued next page.

Function 5 has priority over function 1. Function 6 has priority over function 2.
Functions 1,2 & 5,6 are blocked when depressed at the same time.
Breaker 1 = OFF. Breaker 2 = ON.

Functions 1,2 are blocked when depressed at the same time.
Functions 5,6 are blocked when depressed at the same time.
Breaker 1 = ON. Breaker 2 = ON.

Function 7 priority over function 3.
Function 8 priority over function 4.
Breaker 3 = ON. Breaker 4 = OFF.

Function 7 has priority over function 3. Function 8 has priority over function 4.
Function 3,4 & 7,8 are blocked when depressed at the same time.
Breaker 3 = OFF. Breaker 4 = ON.

Functions 3,4 are blocked when depressed at the same time.
Functions 7,8 are blocked when depressed at the same time.
Breaker 3 = ON. Breaker 4 = ON.

Interlocking switch



On delivery, the interlocking is disconnected, that means that all breakers are in position OFF.

Relay functions

With System 850, you can program the 16 relays fully individually.
Each relay works in two different ways:

1. The relay is closed activated only as long as the transmitter button is depressed.
This is the standard setting.
2. The relay's position alters each time the transmitter button is depressed, but holds the new position when the button is released. This is latching relay function.
Latching relay function comes into use when operating, e.g., a pump or a lamp.

On the receiver there is a program selector switch (see fig. receiver). Breaker no. 1 is used for programming the latching relay function.

1. Start-up the system.
2. Set breaker no. 1 on the program selector switch to position ON.
This should switch off all the relays and red LED's in the receiver.
3. Operating the transmitter: depress those buttons with latching function.
This should switch on the red LED lights for the respective relays.
4. Set breaker no. 1 to position OFF.
5. Latching function is set and can now be used.

NB! Continued next page.

If you decide that the relays should be set for standard function, that is **no latching function**

1. Start-up the system.
2. Set breaker no.1 on the program selector switch to position ON.
3. Set breaker no. 1 to position OFF without pressing any button on the transmitter.
4. The relay is closed/activated only as long as the transmitter button is depressed.

Program choice switch in receiver
(see figure on receiver)



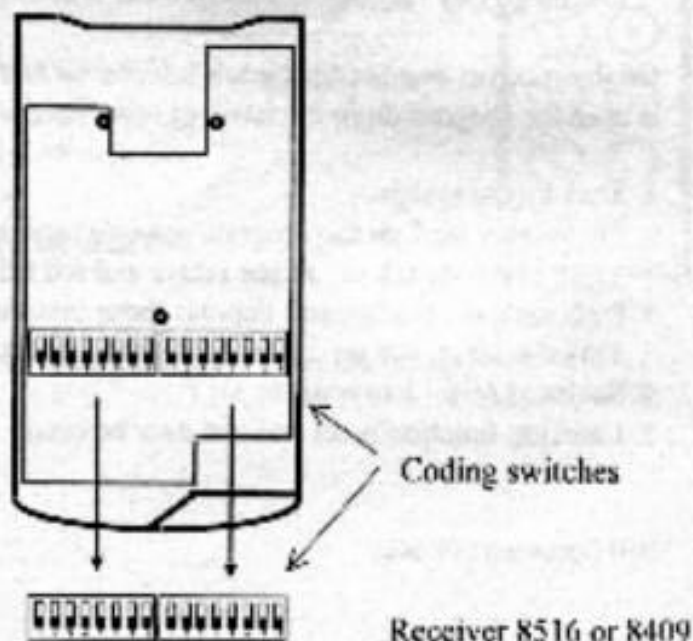
Coding

All systems are delivered factory-coded. If you wish to re-code the equipment according to the 65,536 code combinations available in System 850, follow the instructions below. Note that a transmitter and receiver that is intended to function together must have exactly the same code set in the black code switches. In other words, a transmitter breaker in the ON position – a receiver breaker in the ON position.

1. Make sure the transmitter is switched off.
2. Open the transmitter and the receiver.
3. Set your own code via the transmitter's black coding switches.
4. **Set exactly the same code via the receiver's black coding switches (see fig. below).**
5. Start-up the transmitter.
6. Check that the relays close when the transmitter buttons are depressed.
7. Screw together the transmitter and the receiver.

NB! The transmitter is turned as shown in the adjacent diagram. That is, the upper part flips down towards the receiver's coding switches.

When you now see the codeswitches, ON is in the upper edge.



Troubleshooting system 840/850

If the equipment is not functioning as it should, please check the following points:

Receiver's various LED indications

- Yellow LED lights when receiver has correct feed voltage.
- Green LED lights when receiver accepts radio signals.
- Each relay has a red LED that lights when the relay closes.

Faulty function	Possible reasons	How to put it right
Receiver's yellow LED does not light.	Receiver has wrong drive voltage. Fuse failure in receiver.	Check the drive voltage. Change fuse *
Receiver's green LED lights when you transmit but relays do not close.	Code in transmitter not the same as in receiver.	Set identical codes in transmitter and in receiver.
Receiver's green LED does not light when you transmit.	Frequency in transmitter not the same as in receiver.	Set identical frequencies in transmitter and in receiver.
Receiver's green LED lights when you are not transmitting.	Someone else is transmitting locally on your frequency.	Change your frequency, both in transmitter and receiver.
Transmitter does not start when you depress buttons 7 & 8 at same time (at least 1 second) and then release them. Red LED lights.	Key power switch is in OFF position.	Unlock key power switch (ON).
	Stop button is pushed in.	Pull out the stop button.
	Flat battery.	Charge the transmitter.
	Transmitter button faulty.	Contact your dealer.
Range is too short.	Antenna, antenna cables damaged or wrongly installed.	Check antenna, antenna cables.

* Fuse S1 0,5A ceramic (F) (receiver with feed voltage: 48 VAC, 115 VAC and 230 VAC).
Fuse S2 1 A (T).

If you have gone through these instructions and still having problems with your radio system, please contact your dealer.

Article No:	System 850/840	Voltage
808x2 RF	Robust transmitter 8x2 positions - emergency-stop 8 functions with 7 positions-button (Simultaneously) Selector for boists 1, 2 or 1+2. 32 frequency options and Emergency-stop Continuously transmission Rechargeable battery, battery indicator, adapter M769725 Inertial antenna and beltclip included and rubbercover RUBCO1 Weight: ca 250g Casing: 160x70x35mm	Rechargeable battery

Article No:	System 850	Voltage
851x/ABES	Receiver 16 functions + emergency-stop	12 V DC, 24 V AC/DC och 230 V AC
851x/ACES	Receiver 16 functions + emergency-stop	12 V DC, 24 V AC/DC och 48 V AC
851x/ADLS	Receiver 16 functions + emergency-stop	12 V DC, 24 V AC/DC och 115 V AC
	System 840	
840x/ABS	Receiver 9 functions - emergency-stop	12 V DC, 24 V AC/DC
840x/BFS	Receiver 9 functions - emergency-stop	230 V AC
840x/ES	Receiver 9 functions - emergency-stop	48 V AC
840x/DFS	Receiver 9 functions - emergency-stop	115 V AC
	16 (850) or 9 (840) functions - emergency-stop (Simultaneously) 32 frequency options Interlocking of functions/momentary/latched functions Relay output: Break (NC) or make (NO), 16 A resistive load Antenna included (1/2-433) Casing: 300x270x50mm (850) Casing: 240x160x50mm (840)	

HOLD-R	Holder for handheld and Robust transmitter	
HOLD-C	Holder for Robust transmitter with charger	
RUBCO1	Rubbercover RF-transmitter	
M769725	Charger Miscot 9725 12 V DC (230 V AC-12 VDC)	
M769661	Converter Miscot 9661 24VDC to 12VDC	
M191420	Foil with antennas	See leaflet
M191410	Foil with lead symbols	See leaflet
M191450	Foils for own symbols	See leaflet

Approvals

Country	Approval number	Frequency	Channels
Sweden	Ue950190	433-434MHz	16+16
Norway	NO96000105R&106R	433-434MHz	16+16
Denmark	ALR9667	433-434MHz	16+16
Germany	G750 625G	433-434MHz	16+16
UK	12402	458MHz	11
UK	13958	433-434MHz	16+16
Holland	NL96031273	433-434MHz	16+16
Switzerland	BAKOM96.0107.K.P	433-434MHz	16+16
Austria	CEPT LPDA	433-434MHz	16+16
Finland	No.F18808(X)35	433-434MHz	16+16
Poland	149/99	433-434MHz	16+16