INSTALLATION MANUAL FOR RADIO CONTROL

SESAM 6099 TRANSMITTER

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1. Intended Readers

This installation manual **must** be used when installing Åkerströms Sesam 6000 industrial remote control system to ensure a secure and safe operation. The installation **must** be carried out by a qualified electrician.

2. Introduction

This manual only covers the installation of the Sesam 6000 radio remote control system.
The Sesam 6000 does not implement a complete remote-control system: it provides only the set of outputs that are driven accordingly to the actions performed by the operator on the buttons of the transmitter.
The way the set of outputs is used for controlling the object (for instance for driving the movements and the brakes of a machine or controlling other machine assemblies) depends on the specific installation and is out of the scope of the Sesam 6000.
It has to be explicitly noted that received information from the controlled object is not processed by the Sesam 6000 receiver; it is only used for information purpose. That is the Sesam 6000 has no visibility of the controlled object.
For all the reasons exposed above, the safety of the Sesam 6000 involves mainly the states of its output relays regardless the object's assemblies that are driven by the relays themselves, provided that Sesam 6000 has to be suitable for being used as a part of a radio remote-control system; other safety aspects are related to those specific functionalities that are implemented by the Sesam 6000 itself regardless the controlled object (for instance, the handling of radio signal interruption).
The interface between the Sesam 6000 and the controlled object is intended for being implemented by means of a specific interface assembly; this assembly is not part of the Sesam 6000 system and for this reason is not considered in this installation manual.
The approvals that the Sesam 6000 system has are only valid for the Sesam 6000 system itself.
The complete remote-control system, where the controlled object is one part, has to be tested and approved according to the standards/norms that are applicable and is not a part of Åkerströms Björbo's responsibility

3. SESAM 6000 Technical Specifications

Operating Frequency	434.050-434.775 MHz, 30 channels,
Modulation	FSK
Output power	Max 10 mW
Battery	9V Alkaline battery (6LR61). For cold environments, a 9V lithium based battery is recommended
Power Consumption	Max 40 mA
Weight	175 g (battery incl.)
Dimensions	142x68x26 mm
Operating temperature	-25°C - +55°C

4. General description

The Sesam 6099 transmitter is a flexible multi-purpose transmitter designed for applications where a 3-digit number (0-999) are to be transmitted in combination with up to six separate functions.
All transmitters have a 32-bit addressing scheme in addition to a unique 16-bit serial number.

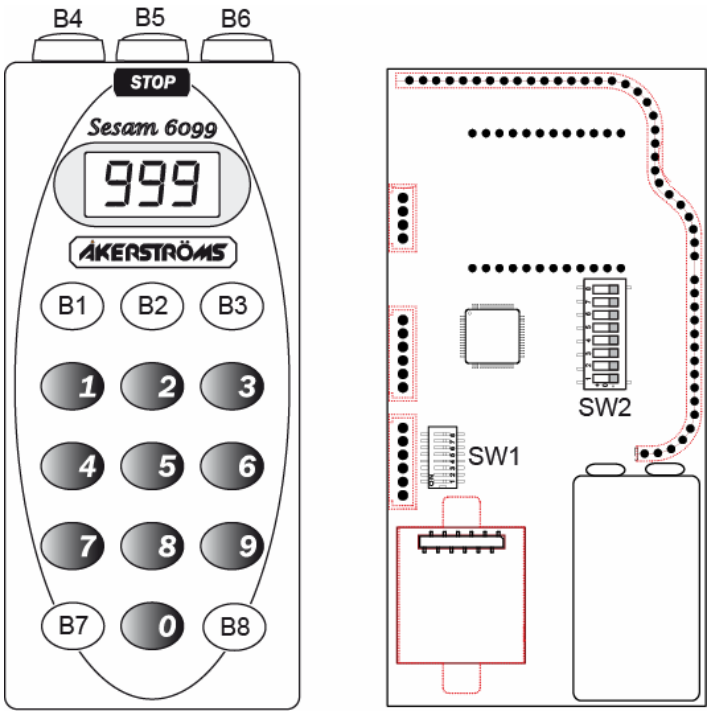

Fig. 1 Transmitter layout and switch locations

5. Buttons and switches

The Sesam 6000 is equipped with a number of buttons and switches as described in Fig. 1

B1-B3 Function buttons 1-3
B4-B6 External function buttons. If the transmitter is fitted with only one external button it is assigned B5.

SW1 – Frequency channel selector
The frequency is set by the 8-pole DIP-switch according to the frequency selection table.
Only the available settings in the table should be used.

SW2 - Sub-ID selector
A sub-ID can be set in the transmitter by using an internal DIP switch (SW2). The sub-ID is a part of the data packet output on the Sesam 6000c receiver RS-232 port. The SW2 DIP switch setting is normally not used by the receiver and is left to be processed by an external PLC.
The DIP switch setting is represented in the data packet as a 16-bit integer and is the sum of all DIP switch settings. The value of each switch is shown in Fig. 2

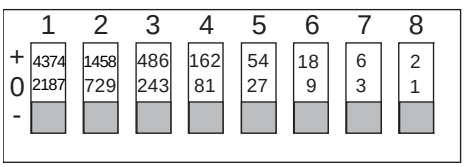

Fig. 2 Sub-ID DIP switch SW2

Note! If OEM program mode 1 is selected on the transmitter the SW2 settings are ignored and the transmitter serial number is used as the sub-ID instead. See Transmitter Configuration Menu section.

6. Sesam 6099 Transmitter Operation

Use the numeric keys to change the display value.
The B7 button increments the display value with 1.
The B8 button resets the the display value to 0.

Press button B1-B6 to send a function.
The transmitter only transmits when a function key is pressed.

6.1. Low battery warning

The Sesam 6099 monitors the battery voltage continuously, Lo bAt is displayed if the battery voltage is to low (<6.5V). The battery voltage is displayed during warning and when replacing the battery.

6.2. Battery replacement

The battery is accessed by removing the screws on the back of the transmitter with a PH1 screwdriver.
Use 9V alkaline batteries for replacement. For cold environments, a 9V lithium based battery is recommended.
Note that the screws shall be tightened with 1 Nm torque.

6.3. Docking station (optional)

Fig. 3 Sesam 6099
Docking station

The docking station is used when mounting a Sesam 6099 transmitter in a machine. The cassette is connected to 12-24V DC. The brown wire is connected to + and the blue wire to ground. The supply voltage must be connected through the vehicle's main switch, which means that the transmitter is disconnected from the supply voltage during charging of the vehicle.

7. Sesam 6099 Transmitter Configuration Menu

The transmitter has several parameters that can be configured using the keypad. To enter the transmitter configuration menu, press and hold down the B7 and the B8 key simultaneously until the display shows CFG.
From the configuration menu the user can view/change up to 10 different parameters by pressing the corresponding numeric key. To view the current setting of a parameter, press the corresponding key (0-9) and wait for 2 seconds.
To change a parameter value, press the corresponding parameter button a second time. The display will show a prompt ___ when a new value can be entered. When setting option 3 (program mode) and 4 (LED control), only one of the fixed alternatives can be selected.
The display will show Err if an incorrect/invalid value is entered.
If no button is pressed for 10 seconds while in the configuration menu, the unit will return to normal operation without saving any of the new parameters.
Press the store button B8 to save the new parameter setting. The display will show Sto to confirm a successful store.

1. Area Code Id1 (0-255) id1 (default - id1=0)
All transmitters in an area must have the same area code setting to interoperate. The area code identity consists of two parts, Id1 and Id2, each value is in the range 0-255. Only transmitters with identical id1, id2 and Customer Id setting can communicate with the same receiver.

2. Area Code Id2 (0-255) id2 (default - id2=1)
See area code id1 above.

3. Program mode (OEM) (0..2) Prg (default - program=1)
Select one of the available OEM program options by pressing the ’3’ button repeatedly.
Program mode 0: Transmits the DIP-switch (SW2) value of the transmitter as the sub-ID.
Program mode 1: Transmits the serial number of the transmitter as the sub-ID.

4. LED control LEd (default - on for 10 seconds)
This option selects the display illumination duration. Select one of the available options by pressing the ’4’ button repeatedly.

t 5	The display will be lit for 5 seconds after a key is pressed.
t 10	The display will be lit for 10 seconds after a key is pressed.
OFF	The display light will always be off. This option saves battery.

5. Battery voltage monitor bAt
This option displays the current battery voltage.

7. PIN lock (0-9999) P in (default – 0000, pin lock disabled)
This option allows the transmitter operator panel to be locked for unauthorized use.
The PIN code is a four digit number (0-9999).
The lock can be activated manually or automatically after a given time of inactivity, see configuration option 8 below.

Note! The PIN code must be set to a number greater than 0. Enter PIN code 0000 to disable the PIN lock.

To set a new PIN code do the following:
While in the configuration menu press the '7' button twice. The display will show
oLd
Enter the old 4-digit PIN code. Enter 0000 if the code has never been set.
nEU
Enter a new 4-digit PIN code. Enter 0000 to disable the PIN code.
rPt
Enter the new 4-digit PIN code again.
Press the store button B8 to save the new setting.

To manually activate the PIN lock, exit the configuration menu and press the B8 key for 3 seconds until the display shows P in.

Unlocking the transmitter: When the display shows P in the transmitter is locked and a 4–digit PIN code must be entered before use. If the correct code is entered the display will show PAS If an incorrect code is entered the display will show Err
Note! If an incorrect PIN is entered 3 times in a row the transmitter will be locked for 2 minutes. During this time the display will show Loc

8. Automatic PIN lock delay (0-999 min) dLY (default – 0, off)
This option sets the duration from the last key press until automatic PIN lock. The PIN-code must be set prior to this option, see configuration option 7. To set a new duration press button '8' again when the display shows dLY
The delay is set in minutes (0-999). Enter 0 to disable the automatic PIN lock.

9. Transmit teach-in message (on/off) t in (default – off)
This option is used when pairing a transmitter with a receiver (teach-in). Toggle this option to on to activate the id transmit mode. This option automatically switches to off after 2 seconds after it has been enabled.

0. Display customer ID and serial number C id
This option displays the transmitter customer ID and serial number. The customer ID is a part of the transmitter identity. This value is factory programmed for each of Åkerströms OEM customers and can not be changed. Only transmitters with the same customer id setting can be used together in a system. The serial number is also factory programmed and unique for every Sesam 6099 transmitter. The serial number can be used in the 6000c receiver.

8. Frequency Channel Selection

The transmitter and receiver channel is set by the internal 8-pole DIP-switch (SW1) according to table below. 30 different channels can be selected. Both the transmitter and the receiver must be set to the same channel. The Sesam6000c receiver channel can also be set via RS232 with the command SET /C.

		DIP-switch (0=off ; 1= on)							
Channel	**Frequency MHz**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
80	434,050	1	1	1	1	0	0	1	0
82	434,075	1	0	0	0	1	0	1	0
84	434,100	1	1	0	0	1	0	1	0
86	434,125	1	0	1	0	1	0	1	0
88	434,150	1	1	1	0	1	0	1	0
90	434,175	1	0	0	1	1	0	1	0
92	434,200	1	1	0	1	1	0	1	0
94	434,225	1	0	1	1	1	0	1	0
96	434,250	1	1	1	1	1	0	1	0
98	434,275	1	0	0	0	0	1	1	0
100	434,300	1	1	0	0	0	1	1	0
102	434,325	1	0	1	0	0	1	1	0
104	434,350	1	1	1	0	0	1	1	0
106	434,375	1	0	0	1	0	1	1	0
108	434,400	1	1	0	1	0	1	1	0
110	434,425	1	0	1	1	0	1	1	0
112	434,450	1	1	1	1	0	1	1	0
114	434,475	1	0	0	0	1	1	1	0
116	434,500	1	1	0	0	1	1	1	0
118	434,525	1	0	1	0	1	1	1	0
120	434,550	1	1	1	0	1	1	1	0
122	434,575	1	0	0	1	1	1	1	0
124	434,600	1	1	0	1	1	1	1	0
126	434,625	1	0	1	1	1	1	1	0
128	434,650	1	1	1	1	1	1	1	0
130	434,675	1	0	0	0	0	0	0	1
132	434,700	1	1	0	0	0	0	0	1
134	434,725	1	0	1	0	0	0	0	1
136	434,750	1	1	1	0	0	0	0	1
138	434,775	1	0	0	1	0	0	0	1

Table 1 Frequency channel table

Declaration of conformity

Åkerströms Björbo AB, Björbovägen 143, 780 45 Björbo, Sweden, declare under our sole responsibility that the product 6099 are in conformity with the following directives:

Radio Module	Digital Unit
EN 300 220	EN 61000-6-2:2005
EN 301 489	EN 61000-6-3:2001 + A11:2004
EN 60950	EN 60950

Lars-Olov Liss, VD, Åkerströms Björbo AB

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