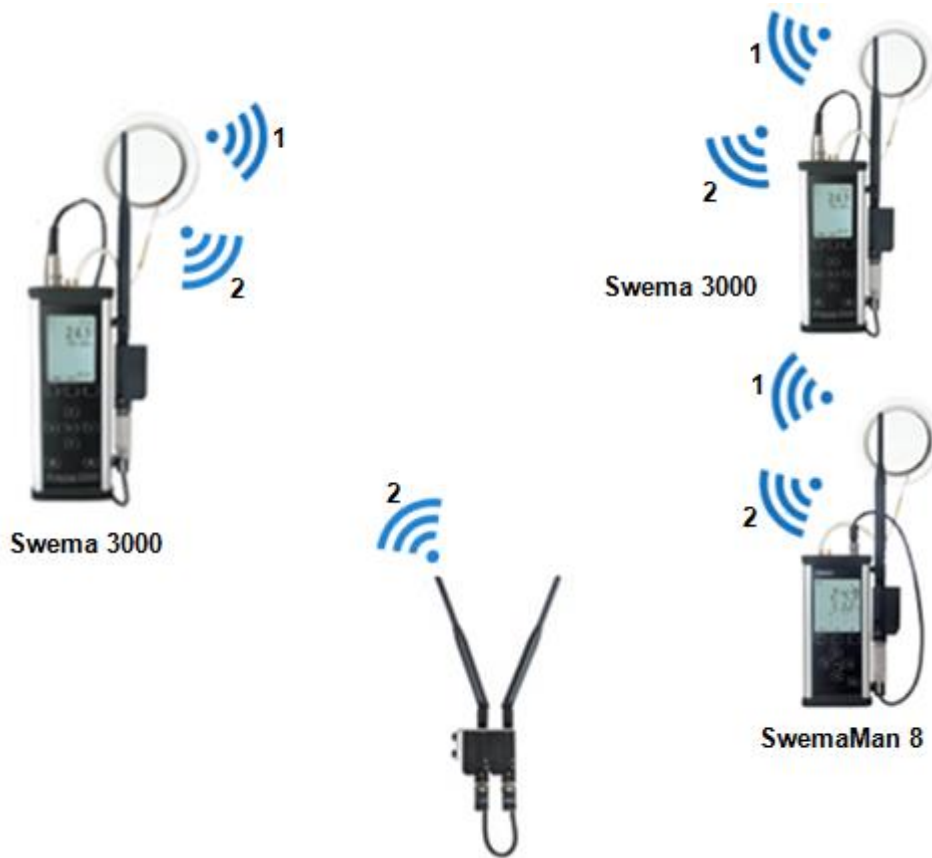


SWEMATWIN FOR BALANCING VENTILATION

Manual ES20150505 Rev. 2



1. Introduction	2
2. Instrumentation	2
3. Connecting	3
4. Settings	4
5. Measurement	5
6. Troubleshooting	6
7. Balancing Ventilation Systems	6

SWEMATWIN FOR BALANCING VENTILATION

Manual ES20150505 Rev. 2

1. INTRODUCTION

Ventilation balancing by modems makes the proportionality method an easy task for just one user. It takes half the time or less to balance a ventilation system with SwemaTwin. The balancing contractor can take on more commissions using the same resources. The building will be ready to use in a shorter time and less interruptions will be caused, leading to high client satisfaction. Swema Twin generates good references and new commissions.

2. INSTRUMENTATION



Swema 3000md (Art. No. 764 200)

SwemaMan 8 (Art. No. 768 300)

Bluetooth Modem Kit for 2 units of Swema 3000md (Art. No. 766 361)

Bluetooth Modem Kit for Swema 3000md and SwemaMan 8 (Art. No. 768 730)

Bluetooth Repeater (Art. No. 766 681)



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SWEMATWIN FOR BALANCING VENTILATION
Manual ES20150505 Rev. 2

3. CONNECTION

SwemaTwin with Swema 3000md as a reference



Swema 3000md



Twin repeater



**reference
Swema 3000md**

SwemaTwin with SwemaMan 8 as a reference



Swema 3000md



Twin repeater



**reference
SwemaMan 8**

SWEMATWIN FOR BALANCING VENTILATION

Manual ES20150505 Rev. 2

4. SETTINGS

- a. **Two units of Swema 3000md. One unit as master instrument and the other unit as a slave (reference) instrument.**

Balancing of ventilation with 2 universal instruments Swema 3000 and a complete SwemaTwin BlueTooth modem. A complete SwemaTwin BlueTooth package contains two BlueTooth modems that are connected to the RS232 contacts on the instruments. There is also a Repeater that contains 2pcs BlueTooth modems connected to each other by a cable, the modems are fitted to a holder with a magnet to facilitate the attachment of the holder with the repeaters on a metallic surface, for example a ventilation duct. The BlueTooth modems are paired together two and two to communicate with the modem they are paired to. At delivery the modems are marked with either +1+ or +2+, the modems marked with +1+ are paired to each other the same for the two modems marked with +2+. They are paired to each other until the reset button on the modem is pressed.

- Connect the BlueTooth modems to the RS232 connectors of both Swema 3000.
- SWITCH ON the modems (including the repeaters, if they are used). The small LEDs indicating %Connected+ flash green on the modems, otherwise the LEDs %Mode+ is green. Make sure that the batteries of the modems are charged otherwise the modems cannot communicate with each other.
- In the Menu 2 of the master instrument, the instrument you are carrying (Picture 1), select the communication as follow:

SwemaTwin: ON
Communication: RS232
Baud Rate: 4800
Add Flow: OFF

- In the Menu 2 of the reference instrument (slave unit), the instrument you leave at the reference valve, (Picture 2) select the communication as follow:

SwemaTwin: OFF



SWEMATWIN FOR BALANCING VENTILATION

Manual ES20150505 Rev. 2

Menu 2				
SwemaTwin	ON			
Communication	RS232			
Baud Rate	4800			
Add Flow	Off			
Protocol	Short			
1 Unit Decimals	1			
2 Unit Decimals	1			
Auto Zero	On			
K2-factor	On			
Exponent	0,500			
<table border="1"> <tr> <td>EXIT</td> <td>MENU3</td> <td>SET</td> </tr> </table>		EXIT	MENU3	SET
EXIT	MENU3	SET		

Picture 1: Menu 2 of Master

Menu 2				
SwemaTwin	OFF			
Communication	RS232			
Baud Rate	4800			
Add Flow	Off			
Protocol	Short			
1 Unit Decimals	1			
2 Unit Decimals	1			
Auto Zero	On			
K2-factor	On			
Exponent	0,500			
<table border="1"> <tr> <td>EXIT</td> <td>MENU3</td> <td>SET</td> </tr> </table>		EXIT	MENU3	SET
EXIT	MENU3	SET		

Picture 2: Menu 2 of Reference

- b. One unit of Swema 3000md as master instrument and one unit of SwemaMan 8 as a slave (reference) instrument.

The same procedure as in a is followed, except for the slave (reference) instrument, SwemaMan 8, where a Twin mode cannot be selected, see picture 3.

NOTE!

It is important to select the same measuring unit in both instruments during the setting and before the measurement.

Real		I/s
58.7		
34.5		Pa
K	10.00	
Mode	Edit	Unit

Picture 3: SwemaMan 8 - Reference

5. MEASUREMENT

The Master instrument displays the measuring values of both instruments, the Master and the Reference. If the same measuring unit is set on both instruments the master will also display the ratio of the values of the master and the reference in percentage.

$$(\text{Master} / \text{Reference}) * 100\%$$

This ratio is very handy for the adjustment of ventilation systems according to the proportionality method.

Note! If the unit of one of the instruments is set to l/s, and the unit of the other instrument is set to m³/h, the ratio cannot be calculated percentage of the ratio is set to the other no percentage will be calculated.



13:06:20	
Measured Master flow	→ 95.2 I/s
Measured reference flow	→ 58.7 I/s
	162,1%

Real		I/s
58.7		

SWEMATWIN FOR BALANCING VENTILATION

Manual ES20150505 Rev. 2

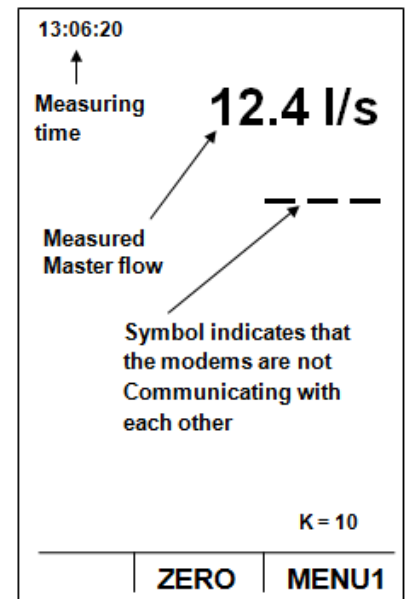
6. TROUBLESHOOTING

The Master instrument displays the symbol +---+ where the Reference measurement should be displayed. There is no connection between the master and the reference instrument, see picture 5

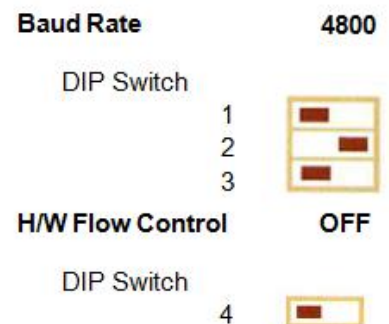
If so please check as follows:

- The modems are switched ON and their batteries are charged otherwise the modems cannot communicate with each other.
- The modems are connected to the instruments and the antennas are attached to them
- The settings in the menu 2 of the master and menu 2 of the reference instrument are according to **4a** above. When the reference instrument is a SwemaMan 8 there is not a menu 2 to check on the reference.
- The modems are connected, (including the repeaters, if they are used). The small LED indicating **%Connected+** flash green on the modems, if not the LED **%Mode+** is green. Switch the modems OFF and ON again. During the measuring the LEDs **%Connected+** and **%RS232-Tx/Rx+** flash intermittently.
- If the LED **%RS232-Tx/Rx+** lights red, the measuring data from the reference, is not sent by the receiver to the master instrument. Switch the modems OFF and ON again. If the LED continues to lights red
- The switches on the BlueTooth modems are set to Baud Rate 4800 (switches 1 and 3 should be set to the left and switch 2 to the right). (Picture 4)
- **-H/W Flow Control+** switch is set to OFF (switch 4 to the left). Picture 6)

If the modems still do not connect to each other, after following the steps above, the modems have to be paired once again. Refer to the manual delivered with the BlueTooth modems for pairing). Probably it is necessary to pair again either the modems marked as **%+or** the modems marked as **%+.** Please check the modems that have to be paired again.



Picture 5: Measuring mode



Picture 6: Modem switches

7. BALANCING A VENTILATION SYSTEM ACCORDING TO THE PROPORTIONALITY METHOD

Choose the valve where the reference instrument will be measuring. The flow in the chosen valve is the **nominal reference flow**. The flows in the other valves (measurement points) are adjusted with the Master instrument. These nominal flows are called **nominal Master flows**.

Calculate for each Master measurement point:



SWEMATWIN FOR BALANCING VENTILATION
Manual ES20150505 Rev. 2

(Nominal Master Flow / Nominal Reference Flow) x 100%

This ratio is obtained when balancing two diffusers/inlets/outlets.
Measure with the reference instrument on the reference in/outlet

Measure on the in/outlet to be adjusted with the Master instrument.

The ratio at this point of the measurement is important, not the actual flow. The final flow is obtained when the final adjustment of the total flow in the ventilation system is done.

For further reading on Proportionality method, download file

 [Proportionality method with SwemaTwin](#)

From: <http://www.swema.com/instrument.php?p=SwemaTwin&k=Air%20Flow>