

Connection & Settings of SEVEN Sensors to SMA Data Manager M



1. Introduction

This document is prepared for SMA Data Manager M users. Steps are explained below to connect SEVEN Sensor Box to SMA Data Manager M.

Following meteorological data to be provided by SEVEN Sensor Box. Communication is provided via RS485 with Modbus RTU protocol.

- 1. 3S-IS, Irradiance Sensor (W/m²)
- 2. 3S-MT-PT1000, Module Temperature Sensor (°C)
- 3. 3S-AT-PT1000, Ambient Temperature Sensor (°C)
- 4. 3S-WS-PLS, Wind Speed Sensor (m/s)
- 5. 3S-RH&AT, Relative Humidity Sensor (%)
- SEVEN has the right to make modifications without notice.

2. Cable Connection

Connect the green wire of the output cable of the Sensor Box to Data (+) (RS485 A / Data (+)) port of the SMA Data Manager M and connect the yellow wire of the output cable of the Sensor Box to Data (-) (RS485 B / Data (-)) port of the SMA Data Manager M.

White and brown wires of the output cable of the Sensor Box power up the Sensor Box as shown in Table 1.

Brown	Power (+)	
White	Power (-)	
Green	(RS485 A / Data (+))	
Yellow	(RS485 B / Data (-))	

Table 1: Communication and Power Cable Color Coding

Plug assignment:					
Plug	Position	Assignment			
	1	Data+ (D+)			
ââââââ	2	Not assigned			
	3	Ground (GND)			
	4	Data- (D-)			
1 2 3 4 5 6	5	Line termination (optional)			
	6	Line termination (optional)			

Figure 1: Plug Assignment

A cable with magnetic field protection can be used as communication and power cable between the sensor and the datalogger. Please don't use CAT 6 cable.

SEVEN sensors are supplied with a voltage of 12-30 VDC. The recommended voltage value is 24 VDC. A high quality power supply must be used for the sensor supply. If the datalogger has 12 VDC or 24 VDC output, it can be used as a power source.





Figure 2: SMA Weather Station



3. Settings

SEVEN Sensor Box will not be automatically detected by SMA Data Manager M. Therafore, the settings shall be proceeded manually.

Step 1 and 2 : To login to enter the SMA Data Manager M user interface, enter the SMA Data Manager M IP address in the browser of your PC on the same network as SMA Data Manager M and login to user interface.

📂 SMA DATA MANAGER M x +		✓ – ∞ ×
← → C ▲ Güvenli değil https://192.168.12.3/webui/login		e 🖈 🖈 🖬 🥪 :
🖬 Gmail		
SMA DATA MANAGER M		
	Oturum aç	
	E-posta adresi veya kullanıcı adı I	
	Şifre	
2	Olturum aç	
21		

Figure 3: Data Manager M Interface

Step 3 and 4: Click on "Device administration" in the menu "Configuration".

 ✓ si ✓ - ✓ - ✓ Gr 	MALDATA MANAGER M × + C & Governi degii Https://192.168.12.3/webui/Plant1/dishboard wal	✓ - • • × ± ☆ ★ □
SM.	SMA DATA MANAGER M	🚊 Belir KÖR
ŵ	Argesim_GES	0
Acenter Monter Contigu	CONFIGURATION Pagain, GES System properties Device parameter adjustment Ord Management savice Meter configuration Licensed functions	

Figure 4: Configuration Menu



TECHNICAL DOCUMENT - SMA DATA MANAGER M CONNECTION & SETTINGS

Step 5 : Click on 🕀 button.

🥦 SMA DATA	A MANAGER M × +			~ - • ×
$\leftrightarrow \rightarrow c$	Güvenli değil https://192.168.12.3/webui/Plant:1/configuration/view-device-m	lanagement		e 🖈 🖈 🖬 💕 E
🖾 Gmail				
SMA	SMA DATA MANAGER M			🔔 Bekir KÖR 🗸
Â	Argestim_CRES B Select Device	a riana rana ri	영계 전망기 전망기 전망기 전망기 전망기 전망기	Ø
Dashboord	Device administration • nur Browne devices			L Download
(Configuration	Device name	Product	Serial number	: 💽 5
	📻 SMA Data Manager M	EDMM-10	3008627278	

Figure 5: Configuration Settings of SEVEN Sensor Box

Step 6 and 7: On the opened window choose "Modbus Devices" and click on "Continue" button.

SMA DAT	A MANAGER M X +		· · · · · · · · · · · · · · · · · · ·
Gmail	Guvenir değir Hitps://192.166.12.5/webui/Planc l/configura	ior/wew-device-management	
SMA	SMA DATA MANAGER M		
â	Argesim_GES		Ū.
Dashboard	Device administration 0	Device registration	
Monitoring	Filter Browse dovices	1. STEP 2. STEP 3. STEP	💆 Download
-	Device name	Protocol selection	: •
Configuration	SMA Data Manager M	Here you can add devices to your system. Select the protocol of your device first. Image: Modbus devices Add Modbus devices. Image: SMA Speedwire devices Add Speedwire devices (e.g. SMA inverter or EMA Energy Meter). Image: SMA FLX/TLX devices Add SMA FLX/TLX devices. Image: SMA data devices Add SMA data devices.	-
			Yeven

Figure 6: Configuration Settings of SEVEN Sensor Box



Step 8: Click on "Managing Modbus profiles".

🥦 SMA DAT	A MANAGER M × +		~ - ° <mark>,</mark> × `
 	Güvenli değil https://192.168.12.3/webui/Plant:1/configurat	ion/view-device-management	e 🖈 🖈 🖬 🦭 E
Gmail			
	SMA DATA MANAGER M		L Bekir KOR ~
â	Argessim_GES Befact Device		()
Dashboard	Device administration •	Device registration	
	Filter	1. STEP 2. STEP 3. STEP	
Monitoring	Browse devices		👲 Download
Configuration	Device name	Modbus devices	: 0
	SMA Data Manager M	Here you can search Modbus devices according to certain criteria and add them to your system.	
		COM1 RS485 Modbus RTU *	
		Modbus profile"	
		SunSpec Menoging Modbus profiles 8	
		Baud rote* 0	
		9600 Advanced settings	
		Device nome* 0	
		1 Modbus	
		Cancel Previous Continue	

Figure 7: Configuration Settings of SEVEN Sensor Box

Step 9: Click on "Create a new Modbus profile".

📂 SMA D	JA MANAGER M × +		~ - ° ×
$\leftrightarrow \rightarrow 0$	Güvenli değil https://192.168.12.3/webui/Plant:1/configurat	ion/view-device-management	🖻 🖈 🖬 👹 E
🖂 Gmail			
SMA	SMA DATA MANAGER M		🚊 Bekir KÖR ~
*			
Configuration	Device administration •	Configuring Modbus profile	E Download : O
		Carcel	YEVEN

Figure 8: Configuration Settings of SEVEN Sensor Box





Step 10: Fill the gaps as shown below :

- Name of Modbus profile : SEVEN Sensor Solutions
- Deuite type : Sensor System in General
- Byte sequence : Big-Endion
- Model designation : Enter the sensor model.
- Mapping template : Monitoring

Step 11 : Click on 🕒 button from the section that opens at the bottom of the window.

SMA DATE ← → C	A MANAGER M x + A Güvenli değil https://192.168.12.3/webui/Plant:1/configurat	ion/view-device-management		× - • × × ⊮ ★ ★ ∎ €
🔛 Gmail				
SMA	SMA DATA MANAGER M			🚊 Bekir KÖR 🗸
â				
Dashboord	Device administration @	Configuring Modbus profile 1 Process your own Modbus profiles or create new configured depending on the Modbus device.	v Modbus profiles. Corresponding register values must be	
Monitoring	Browse devices	Saved Modbus profiles		👤 Download
		New Profile	👤 Import	
Configuration	Device name	Name of Modbus profile*		. •
	SMA Data Manager M	SevenSensör	1	
		Device manufacturer*	Model designation*	
		Seven Sensor Solutions	35-IS	
		Device type*	Mapping template*	
		Sensor System in General	Monitoring	
		Byte sequence*		
		Big-Endian	• N	
	1	Channel designation Register address	Register type Function code Scaling factor	
			Cancel Save	

Figure 9: Configuration Settings of SEVEN Sensor Box

Step 12 : Define the information about the sensors as shown in Figure 10 for the configuration of the sensors that you have.

Step 13 : Click on "Save" button.

SMA DAT	A MANAGER M × +								× - °,×
← → C	A Güvenli değil https://192.168.12.3/webui/Plant:1/configura	tion/view-device-management							e 🖈 🖈 🖬 💕 E
🗹 Gmail									
SMA	SMA DATA MANAGER M								🚊 Bekir KÖR 🗠
Dashboord	Device administration •	Configuring Mod	ous profile 🧿	Model de	esignation*				
		Seven Sensor Solutions		35-15					
Monitoring	Filter Browse devices	Device type*		Mapping	template*		_		Download
		Sensor System in General		• Monito	iring		- 8		
-	Device name	Byte sequence*					- 8		: 0
Configuration	SMA Data Manager M	Big-Endian		•			- 18		
		Channel designation	Register address	Register type	Function code	Scaling factor	• 1:	2	
		Insolation [1]	• 12	uint16 💌	(0x04) *	0.1	1		
		Temperature [1]	• []21	intlă 💌	(0x04) 💌	0.1	1		
		Temperature [2]	* 29	int1ó 🔻	(0x04) 👻	0.1	1		
		Speed [1]	* 53	uint16 💌	(0x04) *	0.1	1		
		Percent [1]	• 33	uint16 🔻	(0x04) 🔻	0.1			
		1000000000				Cancel	Save		

Figure 10: Configuration Settings of SEVEN Sensor Box

TECHNICAL DOCUMENT - SMA DATA MANAGER M CONNECTION & SETTINGS



Step 14 ve 15 : Make the following definitions in the **"Device registration-2.Step"** window and click on **"Continue"** button.

- Interface : COM 1 RS485 Modbus RTU
- Modbus profile : SEVEN (Choose the defined sensor).
- Baudrote : 9600
- Device address : 1
- Device name : Modbus

ID is 1 and Baudrate is 9600 of SEVEN Sensor Box as factory decult. If these values are changed by the user, please enter new valves.

🔀 SMA DA	TA MANAGER M × +		· - • ×
← → G	Güvenli değil https://192.168.12.3/webui/Plant:1/configurat	ion/view-device-management	er 🖈 🗰 🥪 i
M Gmail			
SMA	SMA DATA MANAGER M		🚊 Bekir KÖR 🗠
Â	Argesim_GES		Ø
L Dashboard	Device administration 0	Device registration	
Monitoring	Filter Browse devices	1. STEP 2. STEP 3. STEP	Download
Configuration	Device name SMA: Date Manager M	Modbus devices 14	: •
		Band over	

Figure 11: Configuration Settings of SEVEN Sensor Box

Step 16 : The sensor which configuration is completed will be found as a result of the scan in the **"Device registration-3.STEP"** window. After finding the sensor, tick the box and write the sensor serial number to **"Serial Number"** section.

Step 17: Click on "Save" button.

SMA DATA MANAGER M × +		× - • ×
C A Guvenii degii Https://192.168.12.3/webui/Plant:1/configuration Gmai	/view-device-management	≝ ¥ ≽ ⊔ ⊎ :
SMA DATA MANAGER M		🚊 Bekir KÖR 🗸
Argesim_GES @ Select Device		Ø
Device administration For Torice renore MAA Data Manager M	Device registration 1. STEP 2. STEP 3. STEP 1. STEP 2. STEP 3. STEP Image: Device detected Image: Device name Image: Device detected Serial number Device name Image: Device detected Serial number Device name Image: Device detected Serial number Device name Image: Device name State Device name Image: Device name State Device name Image: Device name State Device name Image: Device name Device name Device name D	E Download : •
	Figure 12: Configuration Settings of SEVEN Sensor Box	



TECHNICAL DOCUMENT - SMA DATA MANAGER M CONNECTION & SETTINGS

Step 18 : After completing configuration steps, the sensor will appear in the **"Devices administration"** page.

Step 19 ve 20 : Click on "Select Device" in the top menu. And then click on "Modbus-1" (Defined sensor).

INAGER M × +			~ - ° <u>`</u> ×`
Güvenli değil https://192.168.12.3/webui/Plant:1/monitoring/view-current-me			ie 🛧 🖈 🖬 😽 🗄
A DATA MANAGER M			🔔 Bekir KÖR ~
Argesim_GES Select Device			Ø
Device administration • 18			
Filter Browse devices			👲 Download
Device name	Product	Serial number	: 0
12 Modbus-1	3545	35-15	
E SMA Dutu Monoger M	EDMM 10	3008627278	
	ANALCER M × + A Covernit degi Hetper/192:163123/web.u/Parch1/montering/wew-carrent-me A DATA MANAGER M Agreem_C2	ANALGER X + + Coversit degit hetps://192.162123/vebu/Plant://montoring/www-current-measurement-values ADATA MANAGER M Pervice administration • 18 Browne devices Pervice norme Product Mondburs 1 35/3 MAN Data Menoger M 5DMM.10	NADER W * * Coveral degit Manager AL Ager AL Coveral degit Manager AL Ager AL Coveral degit Ager AL Coveral degit Ager AL Coveral degit Coveral degit Ager AL Coveral degit Coveral degit <tr< th=""></tr<>

Figure 13: Configuration Settings of SEVEN Sensor Box

🥦 SMA DATA	A MANAGER M	× +			~ - • ×
← → C	🛦 Güvenli değil	https://192.168.12.3/webui/Plant:1/monitoring			e 🛧 🛪 🖬 🔐 :
🗹 Gmail					
SMA	SMA DATA MAN	ager m 19			🚊 Bekir KÖR 🖂
â	• Argesim_GES	Select Device			0
Œ		Status list			
Dashboard	Device	Mojibus-1			
	Filter	SMA Data Manager M			
Monitoring	Browse devi	cname, value or channel			👱 Download
Configuration	Device name		Product	Serial number	: 💿
	A Mod	bus-1 20	3545	3545	
	- SMA	Data Manager M	EDMM-10	3008627278	

Figure 14: Configuration Settings of SEVEN Sensor Box

8



Step 21 : On the dashboard page that opens, click on **"Monitoring"** option in left menu.

	SMA DA ← → C ⊠ Gmail	SMA DATA MANAGES M x + → C & Governis degit https://192.168.12.3/webu/Plant.t.mbrtuzbe57d200-dfcd-4dp3+a6df-45607534/95/dashboard Great						× ه ط	- • × • • •		
	SMA	SMA DATA MANAG	GER M								🚊 Bekir KÖR 🗸
	â	Argesim_GES	Modbus-1								0
	Dashboard	Dashbo	ard Mod	ous-1							
21		INFORMATION 35-IS		STATUS							
21	Monitoring		35-15 Seriol number	Device state							
	Configuration										

Figure 15 : Configuration Settings of SEVEN Sensor Box

Step 22 : On the opened window, choose "Instantaneous valves".

🥦 SMA DAT	A MANAGER M × +			× – ø ×
← → C	A Güvenli değil https://192	.168.12.3/webui/Plant:1,mbrtu:be57da	0-dfcd-4db9-a9df-ff680753e95b/dashboard	e 🖈 🛊 🖬 💕 i
😭 Gmail				
SMA	SMA DATA MANAGER M			🚊 Belir KÖR ~
*	Argesim_GES Argesim_GES	sdbus-1		Ø
B	MONITORING			
Dashboard	Modbus-1 Device	Argesim_GES System		
Monitoring		Status list		
	Event monitor	Event monitor		
2 <u>8</u> 3	msiananeoughpioes	Insiding neous values		

Figure 16 : Configuration Settings of SEVEN Sensor Box



Step 23 : You can see defined sensor data instantly.

🗾 SMA DATA	MANAGER M × +				× - • ×
← → c	A Güvenli değil https://192.168.12.3/webui/Plant:1,r	mbrtu:be57d280-dfcd-4db9-a9df-ff680753e95b/monitoring/vie	ew-current-measurement-values		e 🖈 🖈 🛛 🥁 :
SMA S	MA DATA MANAGER M				🚊 Bekir KÖR 🗸
â	Argesim_GES Modbus-1				Ø
CB Dashboard	Instantaneous values				
Monitoring	Enter group, name, value or channel				Download
(B) Contractor	Group	Name	Value	Channel	1
	Further Applications	Speed [1]	5.90 m/s	Measurement.InOvt.Spd[0]	
	Further Applications	Temperature [1]	29.5 °C	Measurement, InOut, Tmp[0]	
	Further Applications	Temperature [2]	29.2 °C	Measurement.InOut.Tmp[1]	
	Further Applications	Insolution [1]	7.4 W/m²	Measurement.In/Out.TotInsol[0]	
	Further Applications	Percent [1]	44,400 %	Measurement.inOut.ValNom[0]	
	Status	Condition	Ok	Measurement. Operation. Health	22
			Q		

Figure 17 : Data Monitoring

After completing all the settings, meteorological data will appear on the dashboard screen of Sunny Portal monitoring system as shown in Figure 18.

*	• Argesim_GES				٩, ٩, ٥
~	Dashboard Argesim_GES				:
•	INFORMATION	STATUS	PERFORMANCE RATIO	SOLAR IRRADIATION	WIND SPEED
*	Argesim_GES	 SMA Data Manager M E1242-1 E1260-1 	No data available Mare Yesterday No data available Mare Iost 30 days	e minute ago e minute terres terres	o minute ago 1.36 m/s Wind speed
	Date of commissioning	MODULE TEMPERATURE	AMBIENT TEMPERATURE		
	On-Grid Operating mode	22.4 °C Module temperature	€ 23.2 °C Ambient temperature		

Figure 18: Sunny Portal Monitoring System



Modbus RTU Specifications

Supported Bus Protocol

BaudRate: 4800, 9600, 19200, 38400
Parity: None, Even, Odd
Stop Bit: 1, 2 (only at no parity)
Factory Default: 9600 Baud, 8N1, Address: 1
Transmission mode: MODBUS RTU
Supported function codes: 0x04: Read Input Register

Register Map:

The following Modbus data can be read individually or in blocks.

ID-Dec.	ID-Hex	Value	Data Type
53	0x35	Wind Speed, 06000, 1/100 m/s	US
12	0x0C	Temperature Compensated Irradiance Value, 01600 in 0.1 W/m ²	US
15	0x0F	Cell Temperature, -400 +850 [range -40 +85°C] in 0.1°C	S
21	0x15	External Temperature 1, -400 +850 [range -40 +85°C] in 0.1°C	S
29	0x1D	External Temperature 2, -400 +850 [range -40 +85°C] in 0.1°C	S
33	0x21	Relative Humidity, 0100 [%] in 1%	US
52	0x34	Wind Direction, 0359 in 1°	US

Table 2: Modbus Map

Contact Informations:

Please feel free to contact our technical team if you face any difficulties during settings.

Can GÜNDÜZ

Cep: +90 530 425 33 19 **E-mail:** teknik@sevensensor.com