USER GUIDE FOR WIRELESS SENSOR CO-ORDINATOR

This document is applied for the following products

Item code	WS433-R-03	HW Ver.	2.0	FW Ver.	1.6
To use with configuration cable	RS485-FM12-USB-1				
Wireless sensors support	WS433 with FW version 2.XX and later				

1. INTRODUCTION

WS433-R-03 is Wireless sensor co-ordinator. It can handles maximum 40 wireless sensors in different type. The output is RS485/ModbusRTU. It can be configured through ModbusRTU by any modbus tool.

The topology of this wireless sensor network is STAR.

One WS433-R-03 is use in one wireless sensor network. Other wireless sensor network will need another WS433-R-03.

It is possible to have multiple wireless sensor networks in same area.



Fig. 1: Complete set of WS433-R-03

2. SPECIFICATION:

Electrical connector	M12-female, 4-pin A-coding
Data speed	Up to 50kbps
Tranmission distance, LOS	500m @ 50 kpbs, or 800m at 2.5kbps
Antenna	External Antenna, 5 dbi, magnetic mount
Power supply	748 Vdc
Frequency Band	ISM 433Mhz, Sub-GHz technology from Texas Instrument, USA
Receiving Sensitivity	-110dBm at 50kbps, -120dBM at 2.5 kbps
Transmit power	10dBm (10mW)*
International Compliance	ETSI EN 300 220, EN 303 204 (Europe) FCC CFR47 Part15 (US), ARIB STD-T108 (Japan)**
Security Standard	AES-128
Operating temperature of PCB	-40oC+85oC
Housing	ABS plastic, IP54
Installation method	Wall mounting by 4.00mm diameter screws (supplied by user)
Product dimension	W57 x D81 x H28 mm
Box dimension	W160 x D150 x H100 mm
Gross weight	< 200g

* Fully compliance with country regulation where 433 Mhz is license-free;

** Applicable for frequency 915Mhz, 868Mhz, 920Mhz versions

3. INSTALLATION



4. BASIC CONFIGURATION

(1) Open Modbus tool on PC.

Link to download this software: http://filerun.daviteg.com/wl/?id=J9cdBHxOUFhRvywyyQBu1n6zJmLhnA6u

Name	Date modified	Type	See
S composibilit	25/01/2019 9:24 AM	Application extension	19.65
Covitag Moditus Configuration Tool Varsion 1.0	28/01/2019 10.35 A.	Application	26 KB
S meter, lia di	28/01/2019 10:12 A.	Application extension	9.68
i mà Iladli	28/01/2019 9:25 AM	Application extension	232 KB
Meebus Memmap of WR133-FW_V1.6 for WS133-FW_V2.xx	29/01/2019 5:15 FM	Microsoft Excel Worksheet	222 KB
 Template WR483 VL6 	30/01/2019 4:44 PM	Microsoft Excel Comma Separated Values File	6 KB
	Note Conceptibilit Conceptibilit Conceptibility Co	Name Date modified 3: convex.ball. 3:2012(215) 2312. 4: convex.ball. 3:2012(215) 2312. 5: convex.ball. 3:2012(215) 2312. 6: torout.convex.ball. 3:2012(215) 2312. 5: torout.convex.ball. 3:2012(215) 2312.	Name Demonstration Type Second

- Run the application named "Daviteq Modbus Confguration Tool Version ..."
 Choose COM Port (the Port which is USB cable plugged in)
- Set the BaudRate: 9600, Parity: none

		IX IX		tx 0	disconnected A
rt BaudRate Parity			^	rx 0	30/01_16:55 disconnected
M14 - 9600 - none -	·			ok 0	30/0116:55 disconnected ==
				crc 0	30/01_16:55
Connect			-	tmo 0	-
Func Reg Num	Format Prm Name	Setting Value	Re	ad Value	CLEAR Ex
1 🖂 🔹	•				

- Click " Connect " untill the Status displays "disconnected" to "connected". It means the WS433-R-03 is being connected with computer;
- Next, we need to import the configuration file for WS433-R-03 by importing the csv file: Go to MENU: FILE / Import New / → select the file with name Template_WR433_V1.6.csv. This file can be downloaded at below link:

Link :<u>http://filerun.daviteq.com/wl/?id=YJjjobfLllV01rP9t8JxFf12564tF99r</u>

Open	Status corre			x	tx	0	disconnec 30/01 1	ted 9:55	
n BaudRate	Parity			_	rx	0	disconnec	ted	
)()) 🦂 « D)	 Daviteq Modbus Configu 	• 4+ Sec	urch Daviteg Modbus Con	fi 🔎	ok	0	disconnected		
					crc	0	30/01_1	5:55	
Organize New folde	r		1 · · ·	0	tmo	0	Connected		
_	Name		Date modified	Туре	Read \	/alue	CLEAR	Ex	
Computer	Template_WR433_V1.6		30/01/2019 4:44 PM	Micro					
Mac-SD on 'Mac									
The so on mac									

Adding S/N of each sensor:

FI	ILE	EC	TI				Sta	atu	s connected		tx	rx 🔴	tx	2495	disconnect	ed
Po	rt		B	aud	Rate P	arity	55.668	tx:	01 03 01 BA 00 02 E4 12			*	rx	2494	disconnect	ed
co	M1	4 •	9	600	• n	one 🔻	55.733	tx:	01 03 01 BC 00 02 04 13				ok	2494	disconnect	ed
-		_		٦			55.807 55.827	nc: tx:	01 03 04 00 00 00 00 FA 33 01 03 01 CC 00 01 45 C9			- 0	crc	0	30/01_16	5:55
D	ISC	onn	ect									-	tmo	0		
			Fu	nc	Reg	Num	Forma	at	Prm Name	Setting Value		F	lead V	alue	CLEAR	Ex
	1.		3		272	1	uint	•	num of node	4		4				
	2		16	٠	273	2	uint		node id 1	19000001		0	к			
	3		16	٠	275	2	uint	1	node id 2	19000002		0	к			
	4		16	•	277	2	uint		node id 3	19000003		0	к			
•	5		16	٠	279	2	uint	1	node id 4	19000004		0				
	6	V	3	٠	281	2	uint	Ŧ	node id 5			0				
	7		3	•	283	2	uint	٠	node id 6			0				
	8	V	3	٠	285	2	uint	٠	node id 7			0				
	9		3	٠	287	2	uint	•	node id 8			0				
	10	1	3	•	289	2	uint	•	node id 9			0				
	11		3	•	291	2	uint	•	node id 10			0				
	12	V	3	٠	256	1	uint	٠	modbus address			1				
	13	7	3	٠	257	1	uint	•	modbus baudrate			0				
	14	J	3		258	1	uint	-	modbus parity			0				

Enter 09 last characters/digits of S/N in "Setting " correspond with sequence of Node.

To Change "Func" 3 to Func 16

Choose $|\nu|$ for confirm configuration so that this setting will be sent to WR433-03. Once successfully sent, change "Func" 16 to Func 3, the "value" column will show the correct value.

D	avit	eq M	lodbu	is Co	onfiguration	n Tool Ve	rsion 1.	0			Date modified	Type		x
FI Po	ILE rt	ED	IT Bi	aud	Rate P	arity	S 30.3	tatu 64,tx	IS connected 01 03 A8 04 00 02 A5 AA		tx 🌖 rx 🌔	x 2966	disconnec 30/01_1 disconnec	ted 6:55 ted
D)isc	4 - onn	ect	500	• n	one 🔻	30.4 30.4 30.4 30.4	24,rx 27,tx 85,rx 88,tx	01 83 03 01 31 01 03 A9 04 00 02 A4 56 01 83 03 01 31 01 03 AA 04 00 02 A4 12			ok 2966 crc 0 tmo 0	30/01_1 disconnec 30/01_1 connected	6:55 ted 6:55
	T		Fur	nc	Reg	Num	Form	nat	Prm Name	Setting Value		Read Value	CLEAR	Ex
	1		3	٠	272	1	uint	-	num of node	4		4		
	2	7	3	٠	273	2	uint	-	node id 1	19000001		190000001		
	3		3	٠	275	2	uint	•	node id 2	19000002		19000002		
	4	1	3	•	277	2	uint	-	node id 3	19000003		19000003		
•	5		3	٠	279	2	uint	•	node id 4	19000004		19000004		
	6	1	3		281	2	uint		node id 5			0	1	
	7		3	٠	283	2	uint	•	node id 6			0		
	8	V	3	٠	285	2	uint	-	node id 7			0		
	9		3	٠	287	2	uint	•	node id 8			0		
	10	1	3	٠	289	2	uint	•	node id 9			0		
	11	-	3	٠	291	2	uint	•	node id 10			0		
	12	V	3	٠	256	1	uint		modbus address			1		_
	13		3	•	257	1	uint	-	modbus baudrate			0		
	14	1	3	•	258	1	uint	-	modbus parity			0		
	15	1	3	٠	41217	2	float	•	Main parameter 1					3
	16	1	3	٠	41473	2	float	•	Main parameter 2					3
	17	1	3	•	41729	2	float	-	Main parameter 3					3

(2) Add S/N of the wireless sensor into Co-ordinator

Setting **Number of Node** (Each node corresponds to a wireless sensor). Follow images below:

1	ILE	ED	IT				Sta	itus connected		tx 🕖 rx 🚺	tx	995	disconnected		
Po	ort		В	audi	Rate Pa	arity	08.105	rx: 01 03 02 63 63 D0 9D			, IX	994	disconnected	2	
C	DM14	•	9	600	• no	one 🔻	08.119	tx: 01 03 00 1D 00 01 14 0C nx: 01 03 02 63 63 D0 9D			ok	994	30/0116:5	d .	
-		sconnect				08.189	tx: 01 03 00 1E 00 01 E4 0C			crc	0	30/01_16:5	30/01_16:55 connected		
-)isco	onn	ect								tmc	0	Carnotatod		
			E		Dea	Num	Forma	Dura Marris	Catting Malue			/alua	CLEAD	E.c.	
			-		ney	NUITI	FUIIId	it Prm Name	Setting value		Read	alue	CLEAR	EX	
•	1	V	3	•	272	1	uint	num of node	4		Read	alue	CLEAR	EX	
Þ	1	7	3	•	272 273	1	uint uint	num of node node id 1	4		Kead	aue	CLEAR	EX	
•	1 2 3	7	3 3 3	•	272 273 275	1 2 2	uint uint uint	num of node node id 1 node id 2	4		Kead (raiue	CLEAR	EX	
•	1 2 3 4	V V	3 3 3 3	•	272 273 275 277	1 2 2 2	uint uint uint uint uint	num of node node id 1 node id 2 node id 3	4		kead (aue	LLEAR	EX	

- First, enter the number of node in "Setting "column. Ex: num of node = 4
 Change "Func" 3 to Func 16
- Choose |v| for confirm configuration so that this setting will be sent to WS433-R-03. Once successfully sent, the "value" column will show the correct value.

🔀 Davit	eq Modbus Configuration Tool Ve	ersion 1.0
E FILE	EDIT	Status connected
Port	BaudRate Parity	45.481,x: 01 10 01 10 00 01 01 F0

	Port CON Dis	4	onn	B 9 9	audi 600	Rate P	arity one ~	45.48 55.54 55.64 56.94 57.06	1 лх: 2 tx: 2 лх: 9 tx: 5 лх:	01 10 01 10 00 01 01 F0 01 10 01 10 00 01 02 00 04 01 10 01 10 00 01 02 00 04 01 10 01 10 00 01 01 F0 01 10 01 10 00 01 02 00 04 01 10 01 10 00 01 01 F0	85 C3 85 C3	^	rx ok crc tmo	128001 128001 0	20-02_10.57 connected	
Ē		f	Τ	Fur	nc	Reg	Num	Form	at	Prm Name	Setting Value	R	ead Va	ue	CLEAR	Ex ^
l	•	1		16	•	272	1	uint	•	num of node	4	0	ĸ			
	:	۶L		3		273	2	uint	•	node id 1						
		3		3	•	275	2	uint	•	node id 2						
		4		3	•	277	2	uint	٠	node id 3						
- 1				2		270	2	wint		node id 4						

Change "Func" 16 to Func 3 to read value setting for double checking.



Once the setting done, we can see the wireless sensors sending data to WR433-03 (sensor must be installed with battery).

🖉 Davite	eq N	lodbu	s Co	onfiguratio	n Tool Ve	rsion 1.(Date modified		Type	-		×	
FILE	EC	п				S	atu	is connected		tx 🕘 rx 🌔)	tx 1131	8	disconnect 30/01_16	ed :55	^
COM14	• •	96	00	• n	one •	54.8 54.8	11,00 1,00 14,00	01 03 00 46 00 01 65 DF 01 03 02 00 00 B8 44 01 03 00 46 00 01 65 DF			Î	ok 1131	0	30/01_16 disconnect	ed 355 ed	
Disc	onn	ect				54.9 54.9	7,x: 10,tx	01 03 02 00 00 B8 44 01 03 00 47 00 01 34 1F		(1	crc 0 tmo 0		30/01_16 connected	:55	
		Fun	c	Reg	Num	Form	at	Prm Name	Setting Value		R	ead Value		CLEAR	Ð	x *
11	7	3	•	291	2	uint	٠	node id 10			0					
12	V	3	•	256	1	uint	•	modbus address			1					
13		3	٠	257	1	uint	•	modbus baudrate			0					
14	1	3	•	258	1	uint	•	modbus parity			0					
15		3	٠	41217	2	float	٠	Main parameter 1			25	.125				Г
16	7	3	٠	41473	2	float	٠	Main parameter 2			53	1524658203	125			Π
17		3	٠	41729	2	float	٠	Main parameter 3			50	7629394531	25			L
18	7	3	•	41985	2	float	٠	Main parameter 4			50	4241943359	375			
19	V	3	•	42241	2	float	٠	Main parameter 5							3	1
20	V	3	٠	42497	2	float	٠	Main parameter 6							3	
21		3	٠	42753	2	float	•	Main parameter 7							3	
22	V	3	٠	43009	2	float	٠	Main parameter 8							3	
23	7	3	٠	43265	2	float	•	Main parameter 9							3	
24	V	3	•	43531	2	float	•	Main parameter 10			_				3	
25	1	3	•	41220	2	float	٠	Second parameter 1			0					
26	1	3	•	41476	2	float	٠	Second parameter 2			25	1379394531	25			
27	V	3	•	41732	2	float	٠	Second parameter 3			25	6364440917	969			
28	1	3	•	41988	2	float	٠	Second parameter 4			25	3947448730	469			Ľ
29	V	3	٠	42244	2	float	٠	Second parameter 5							3	1
	1 mg	0		40500	0		-	<u> </u>							0	1

CONGRATULATION !!!

YOU HAVE DONE THE BASIC SETTING, NOW YOU CAN USE YOUR WIRELESS SENSORS

5. APPENDIX:

- Link download software "Daviteq Modbus Confguration Tool Version ..." : <u>http://filerun.daviteq.com/wl/?id=J9cdBHxOUFhRvywyyQBu1n6zJmLhnA6u</u>
- Link download file "Template_WR433_V1.6.csv" : <u>http://filerun.daviteq.com/wl/?id=YJjjobfLllV01rP9t8JxFf12564tF99r</u>

tx I28003 20-02_10:56 ^

- Link download file "Modbus memory map of wireless sensor co-ordinator" : <u>http://filerun.daviteq.com/wl/?id=nBk3oiABghDaWDLbz7XmM2tAg1ILW1vj</u>
- Link download file "User guide for Wireless Sensor Module WS433-M12F": <u>http://filerun.daviteq.com/wl/?id=pvwqS1nz9lzSQ2Uae6GiBailcuymG7Ns</u>

6. SUPPORT CONTACTS:

Manufacturer



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