Wireless Pushbutton Switch

Wireless switch using sub-GHz band Combines wireless reliability and ease-of-use in consideration of work environments

- Sub-GHz band for reduced interference and better signal propagation to difficult-to-reach areas
- Visualization of impedance to wireless transmission because of damage or noise, using Master Unit error output
- Visualization of Slave button reception status using reception confirmation LEDs
- Transmission distance independent of the transmission position of the Slave button
- Visualization of configuration using PC tools ***** that avoid erroneous ID registration
- \bullet Visualization of signal quality in display and usage environments using PC tools st
- 8 outputs with focus on decentralized control
- Self-power generation eliminates battery replacement and enhances safety and energy saving in the Slave button
- Slave button's shape allows easy use of buttons

* Release planned for April 2018



System Components

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Model Number Structure

Model Number Structure Slave button

A 2	A 2 W					
	1 2	3	4 5 6 7	7		
1.		2.		3.		
	Slave button	Fr	equency (MHz)		Protocol	
	Т	С	922.5	1	OMRON's protocol	
5.		6.		7.		
	Button type		Button color		Flange color	
1	Mushroom	R	Red	R	Red	
2	Full guard	G	Green	Y	Yellow	
		Y	Yellow	В	Black	
		А	Blue			
		W	White			
		В	Black			

υ

	Area
S	United States or Canada

Note: This product is a wireless device that conforms to the radio regulations of United States or Canada. It cannot be used outside of United States or Canada.

For product details, please contact us separately.

Master Unit



Note: This product is a wireless device that conforms to the radio regulations of United States or Canada. It cannot be used outside of United States or Canada. For product details, please contact us separately.

Ordering Information

Unit

Туре	Button type	Frequency (MHz)	Area	Button color	Flange color	Model
			United States or Canada	Red	Black	A2W-TC-WC1 US1RB
			United States or Canada	Green	Black	A2W-TC-WC1 US1GB
			United States or Canada	Yellow	Black	A2W-TC-WC1 US1YB
	Mushroom		United States or Canada	Blue	Black	A2W-TC-WC1 US1AB
	Mushroom		United States or Canada	White	Black	A2W-TC-WC1 US1WB
		922.5	United States or Canada	Black	Red	A2W-TC-WC1 US1BR
			United States or Canada	Black	Yellow	A2W-TC-WC1 US1BY
Slave button			United States or Canada	Black	Black	A2W-TC-WC1 US1BB
Slave bullon	Full guard		United States or Canada	Red	Black	A2W-TC-WC1 US2RB
			United States or Canada	Green	Black	A2W-TC-WC1 US2GB
			United States or Canada	Yellow	Black	A2W-TC-WC1 US2YB
			United States or Canada	Blue	Black	A2W-TC-WC1 US2AB
			United States or Canada	White	Black	A2W-TC-WC1 US2WB
			United States or Canada	Black	Red	A2W-TC-WC1 US2BR
			United States or Canada	Black	Yellow	A2W-TC-WC1 US2BY
			United States or Canada	Black	Black	A2W-TC-WC1 US2BB

Master Unit

Туре	Frequency (MHz)	Area	Output configuration	Model
Master Unit	922.5	United States or Canada	Sinking Outputs	A2W-RCN-WC1 US
	922.5	United States of Canada	Sourcing Outputs	A2W-RCP-WC1 US

Note: This product is a wireless device that conforms to the radio regulations of United States or Canada. It cannot be used outside of United States or Canada. For product details, please contact us separately.

Options (sold separately)

Туре	Model	Remarks
High-sensitivity magnetic-base antenna	A2W-AT2.5-WC1	Frequencies: all frequencies supported, cable length 2.5 m Degree of protection: IP65
Slave button holder	A2W-H-WC1	One A2W-H-WC1 is included at purchase of a slave unit.
Slave button strap	A2W-S-WC1	

Ratings

Wireless Specifications

Itom	Slave button model			
Item	Master Unit model	A2W-RC□-WC1 □□		
Set frequency		922.5 MHz		
Frequency channels		1 channel		
Transmission power		50 mV/m max.		
Wireless service area speed	a communications	100 kbit/s		
Communications me	thod	Simplex communications		
Number of wireless pushbuttons connected		8 max.		
Communications distance (line of sight)		Approx. 100 m outdoors (with the included pencil antenna)		
Transmission time		Approx. 3 ms (from Slave button transmission to Slave button reception)		
Repeater function		Not supported.		

Applicable Standards

Area	Wireless standards	Safety standards	EMC standards
United States or Canada	Approved by 47 CFR 15.205 Approved by 47 CFR 15.209 Approved by 47 CFR 15.249 Approved by RS-210	Approved by cULus 62368-1 Conforms to IEC 623680-1 Conforms to EN 62368-1	Conforms to EN 301 489-1 Conforms to EN 301 489-3

Conformance to EN Standards

Use a DC power line less than 3 m to conform to EN standards.

If a power line of 3 m or longer is required, extend the length at the Switching Power Supply's primary side (i.e., the AC power line).

Slave button

Ratings

Item	Specifications		
Operating force	25 N max.		
Number of operations	1,000,000 operations		
Vibration resistance	Frequency: 10 to 55 Hz, half amplitude: 0.75 mm Sweep 5 min, 2 h		
Shock resistance	1,000 m/s ² Direction: 3-axis, 6 directions		
Ambient operating temperature range	-10 to +55°C (no condensation or freezing)		
Ambient operating humidity range	20% to 90%, (no condensation)		
Atmosphere	No corrosive gas		
Storage temperature range	-40 to +70°C (no condensation or freezing)		
Storage humidity range	20% to 90%, (no condensation)		
Degree of protection	IP65		
Altitude 2,000 m max.			
Weight	100 g max.		

Reception Confirmation LED

Item	Details
Green	Reception success (received field strength "Strong")
Yellow	Reception success (received field strength "Weak")
Red	Reception failure
Not lit	Slave button fault (no signal transmission from Slave button)

Operating Characteristics

Item	Code	Unit	Initial standard value
Operating force	OF	N	25 N max.
Total travel	TT	mm	6 mm

Master Unit Ratings

	Item	Specifications		
	Rated voltage	24 VDC		
Master Unit	Allowable voltage range	21.6 to 26.4 VDC		
power supply	Power consumption	2.4 W max.		
	Input current	0.1 A max.		
	Output points	Output 8 points One other point for error output		
	Output circuit shared voltage	30 VDC max.		
	Maximum load current	50 mA per point		
Output rated	Leakage current	0.1 mA max.		
	Residual voltage	2.0 V max.		
	Output logic	One-shot (500 ms)		
	Response time	30 ms or less (from Slave button transmission to Master Unit signal output)		
	Number of connected Slave buttons	8 max.		
Error clear	Residual voltage at short	1.5 V or less, ON		
terminal	Leakage current	0.1 mA or less, OFF (current at short: approx. 7 mA)		
Insulation resist	tance	20 M Ω max. (100 VDC) Between the case and power supply terminals and all outputs terminals Between all power supply terminals and all outputs terminals		
Dielectric streng	gth	1,000 VAC, 1 min. Between the case and power supply terminals and all outputs terminals Between all power supply terminals and all outputs terminals		
Vibration resista	ance	Frequency: 10 to 55 Hz, half amplitude: 0.42mm 3-Directional, 120 minutes each (1 sweep, 1 min. ×120 sweeps)		
Shock resistanc	e	150 m/s ² Direction of shock: 3-axis, 6 directions Shock frequency: 3 × each direction, total 18		
Ambient operati	ing temperature range	-10 to +55°C (no condensation or freezing)		
Ambient operati	ing humidity range	20% to 90% (no condensation)		
Surrounding atr	nospheric conditions	No corrosive gas		
Ambient storage temperature range		-40 to +70°C (no condensation or freezing)		
Ambient operating humidity		20% to 90% (no condensation)		
Degree of protection		IP20		
Altitude		2,000 m max.		
Memory protection		Non-volatile memory (Number of write operations: 1,000,000)		
Weight		150 g (not including antenna) 160 g (including antenna)		
Mounting		DIN rail mounting Screw mounting		

Parts Names and Functions



Number	Terminal name	Name	Functions		
1	24 VDC				
2	24 VDC	Power	Supply 24 VDC.		
3	0 V 1	supply terminals			
4	0 V 2				
5	CLR	Error clear terminal	Connect the error clear terminal to 0V (GND).		
6	OUT 1				
7	OUT 2				
8	OUT 3		Connects the output signal line.		
9	OUT 4	Output	There are two output types: sinking and		
(10)	OUT 5	terminals	sourcing. • A2W-R N-WC1 : Sinking Outputs		
(1)	OUT 6		• A2W-R P-WC1 : Sourcing Outputs		
(12)	OUT 7				
(13)	OUT 8				
14	ERR	Connects the error signal line. Error output terminal There are two output types: sinking and sourcing. • A2W-R_N-WC1 Sinking Outputs • A2W-R_P-WC1 Sourcing Outputs			
(15)	СОМ	Common terminal for outputs	Used as common for output and error output.		
16	-	Antenna terminal	Connect the included pencil antenna. (Optional antenna A2W-AT2.5-WC1 can also be connected.) It transmits and receives data by wireless communications via the antenna.		
Ŵ	-	Reset switch	 Delete the Slave button registration information corresponding to the output settings switch. By pressing the output settings switch in the "ERR CLR" state when an error output is generated, error output will be reset. When the power is turned ON in the pressed state, it is reset to the factory setting. 		

Number	Terminal name	Name	Functions	
(18)	-	Output settings switch	Used to register or delete the ID of the Slave button to or from the output of the Master Unit. Also used to reset the error output without using the error clear terminal.	
(19)	-	Mode settings switch Set the operation mode of the Master Unit to ID mode, TEST mode, and RUN mode.		
20	-	Power LED (PWR)	Lit green when the power is ON.	
2	-	Error LED (ERR)	Lit red when there is a possibility that abnormality occurs in the master unit and it will not output correctly according to the Slave button operation.	
Ø	-	Received field strength LED (RCV)	 RUN mode or TEST mode It lights according to the received electric field strength of the received data. Lit green: Received field strength is "Strong" Lit red: Received field strength is "Weak" ID mode Lit green when registration or deletion is success. Flashing green when registration or deletion is failure. When error output occurs Lit green when the Master Unit setting data error is detected. Lit yellow when there is a possibility that the Master Unit will not output properly according to the Slave button operation. 	
3	-	Output LED (OUTPUT 1 to 8)	 RUN mode When outputting to the output terminal, the corresponding output LED lit yellow. TEST mode It does not output to the output terminal, and the corresponding output LED lit yellow. ID mode The output LED corresponding to the output setting switch lit yellow. 	

Display Section

LED name	Color	Enabled mode	Status	Meaning	
PWB	Green	Always enabled	Lit	During Power Supply	
	Green		Not lit	No power supplied	
		RUN/TEST	Lit/Not lit	Received field strength monitor: Lit green: Received field strength is "Strong" (lit up for 500 msec) Lit yellow: Received field strength is "Weak" (lit up for 500 msec) Not lit: No received	
RCV	Green or	ID	Lit/Not lit/ Flashing	ID registration: Lit green: ID registration successful (lit up for 3 s) Not lit: Data for ID registration not received Flashing green: ID registration failed (flashes for 3 s after every 250 ms)	
	yellow			Delete ID: Lit green: ID deletion successful (lit up for 3 s) Not lit: Data for ID deletion not received Flashing green: ID deletion failed (flashes for 3 s after every 250 ms)	
		Enabled only when ERR LED is lit	Lit/Not lit	Lit green: Error in Master Unit setting data Lit yellow: Error in the most important function (wireless received, registration/verification, or output) All not lit: Error in CPU initialization process during startup	
		RUN/TEST	Lit	Data is received from the ID assigned to the corresponding output	
			Not lit	Data is not received from the ID assigned to the corresponding output	
OUTPUT 1 to 8	Yellow	ID	Lit	Reads corresponding output settings switch values 1 to 8	
1 10 0			All Lit	Reads output settings switch value DEL	
			All not lit	Reads output settings switch value ERR_CLR	
ERR	Red	d Always enabled	Lit	Error in CPU initialization processing at startup, or in Master Unit setting data, or in the most important function (wireless received, registration/verification, or output)	
			Not lit	No Master Unit error	

Note: For received field strength LED (RCV) green flashing, this also flashes even when attempting to select or reset a non-registered output settings No. and delete or reset.

Settings Switch

Mode Settings Switch

Set the operation mode of the Master Unit. Factory setting: ID

Operation mode	Function			
RUN	Communications mode: carry out normal communications			
TEST	Test mode: Perform installation test such as reception intensity measurement *			
ID	ID mode: Register or delete Slave buttons			
* There is no output from the output terminal				

* There is no output from the output terminal.

Output Settings Switch

Register or delete the Slave button $\mathsf{ID}\, \textbf{*}$ for each output number of the Master Unit.

Factory setting: 1

No.	Enabled mode	Other settings requirements	Function
1 to 8		Continuous data reception within a fixed period from the Slave button to be registered	Register the ID of the target Slave button to be registered in the specified output number
_	ID	Press the Reset switch (ON)	Delete IDs of all Slave buttons registered in the specified output number
DEL		Continuous data reception within a fixed period from the Slave button for which the registration is to be deleted	Delete the ID of the Slave button to be deleted from the registration list
		Press the Reset switch (ON)	Delete all IDs from the registration list
ERR CLR	ERR LED lit red + RCV LED lit yellow	Press the Reset switch (ON)	Execute the software reset of the Master Unit

* This is the identification number of the Slave button for wireless communications.

Reset Switch

Execute resets of Master Unit. Factory Setting: Not pressed (OFF)

Setting Procedures

Slave buttons Registration Setting

- Set the output for the Slave button ID.
- When the mode settings switch has been set to "ID", the Slave button ID that has received the data during the same operation of the Slave button three or more times within three seconds, and the contents set in the output settings switch are linked.
- If you make "Wireless Push Buttons Registration setting" while another system is operating in the vicinity, erroneous settings may be made. Therefore, make the "Wireless Push Buttons Registration setting" in an environment in which other systems are not operating.
- In the ID deletion procedure, if the received field strength LED (RCV) flashes, then a non-registered port ID may be selected.
- At Slave button registration (ID registration/deletion procedures), confirm that the output LCD is lighting correctly for the output setting No. to select.

Wireless push button registration/deletion procedure * Using the wireless push button

- 1. Set the mode settings switch of the Master Unit to "ID".
- Set the output settings switch of the Master Unit.
 1 to 8: The output destination is set as outputs 1 to 8.
 DEL: The information about the received ID is deleted from the registration list.
- 3. Press the wireless push button three or more times to make sure that the received field strength LED (RCV) is lit.
- 4. Set the mode settings switch of the Master Unit to "RUN" or "TEST".

Wireless push button deletion procedure

* Using the RESET switch

- 1. Set the mode settings switch of the Master Unit to "ID".
- Set the output settings switch of the Master Unit.
 1 to 8: The ID information registered in outputs 1 to 8 is deleted. DEL: The information about all IDs is deleted from the registration list.
- 3. Press the Reset switch of the Master Unit until the received field strength LED (RCV) is lit.
- 4. Set the mode settings switch of the Master Unit to "RUN" or "TEST".

Resetting Error Output (RCV indicator lit yellow.)

- Using the RESET switch
- Set the output settings switch of the Master Unit to "ERR_CLR".
 Press the Reset switch.

Using the error clear terminal

1. Connect the error clear terminal to GND.

Dimensions

(Unit: mm)

Unit

Slave button A2W-□□-WC1-□□1□□



A2W-00-WC1-00200



Master Unit A2W-DD-WCDDD



High-sensitivity Magnetic Base Antenna



Connection

Internal Connection Diagram (Master Unit)



Output Specifications Operation Timing Chart



Error output

Error Output Signal (Master Unit)

Momentary Continuously error

Status	Internal transistor
Power is OFF.	OFF
Normal operation	ON
Error, or momentary power failure	OFF

Power ON

Note: If you press two or more Slave buttons simultaneously within 2 ms, operation of the Slave button after that may not be sent to the Master Unit.

Output/Error Output Circuit Diagram (Master Unit)





Recommended Ferrules and Crimp Tools Coating peeling amount

Recommend Wire Type	Stripping length (Ferrules not used)	
0.25 to 1.5 mm ² /AWG 24 to AWG 16	8 mm	
2 to 2.5 mm ² /AWG 14	10 mm	

Applicable wire		Ferrule	Stripping	Recommended ferrules		
(mm²)	(AWG)	conductor length (mm)	length (mm) (Ferrules not used)	Manufactu- red by Phoenix Contact	Manufactu- red by Wago	Manufa- ctured by Weidmul- ler
0.25	24	8	10	AI 0, 25-8	H0.25/12	216-301
0.25	24	10	12	AI 0, 25-10		
0.34	22	8	10	AI 0, 34-8	H0.34/12	216-302
0.34	22	10	12	AI 0, 34-10		
0.5	20	8	10	AI 0, 5-8	H0.5/14	216-201
0.5		10	12	Al 0, 5-10	H0.5/16	216-241
0.75	18	8	10	AI 0, 75-8	H0.75/14	216-202
0.75		10	10	12	AI 0, 75-10	H0.75/16
1/1.25	18/17	8	10	AI 1-8	H1.0/14	216-203
1/1.20	10/17	10	12	AI 1-10	H1.0/16	216-243
1.25/1.5	17/16	8	10	Al 1, 5-8	H1.5/14	216-204
1.20/1.0	17/10	10	12	Al 1, 5-10	H1.5/16	216-244
2.5	14	10	12	AI 2,5-10	H2.5/16DS	
Recommended Crimp Tools				CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocrim p4

- **Note: 1.** Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.
 - **2.** Make sure that the ferrule processing dimensions conform to the following figures.



Recommended Flat-Blade Screwdrivers

Use a flat-blade screwdriver to connect and remove wires.

Use one of the following flat-blade screwdrivers. The following table shows manufacturers and models as of 2015/Dec.



Model	Manufacture
ESD 0,40 × 2,5	Wera
SZS 0,4 × 2,5 SZF 0-0,4 × 2,5 *	Phoenix Contact
0.4 × 2.5 × 75 302	Wiha
AEF.2,5 × 75	Facom
210-719	Wago
SDI 0,4 × 2,5 × 75	Weidmuller

* The SZF 0-0,4 × 2,5 (manufactured by Phoenix Contact) can be procured through an OMRON exclusive purchase form (XW4Z-00B).

МЕМО

Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See http://www.omron.com/global/ or contact your Omron representative for published information.

Limitation on Liability; Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

OMRON Corporation Industrial Automation Company Kyoto, JAPAN

Contact: www.ia.omron.com

Regional Headquarters

OMRON EUROPE B.V. Wegalaan 67-69, 2132 JD Hoofddorp The Netherlands Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ASIA PACIFIC PTE. LTD. No. 438A Alexandra Road # 05-05/08 (Lobby 2), Alexandra Technopark, Singapore 119967 Tel: (65) 6835-3011/Fax: (65) 6835-2711 OMRON SCIENTIFIC TECHNOLOGIES INC. 6550 Dumbarton Circle Fremont CA 94555 U.S.A. Tel: (1) 510-608-3400/Fax: (1) 510-744-1442

OMRON (CHINA) CO., LTD. Room 2211, Bank of China Tower, 200 Yin Cheng Zhong Road, PuDong New Area, Shanghai, 200120, China Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

Authorized Distributor:

© OMRON Corporation 2018 All Rights Reserved. In the interest of product improvement, specifications are subject to change without notice. CSM_1_1_0118 Cat. No. A268-E1-01 0118