# **M-6088-32**

# **User Manual**



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Edited by David Chen

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# 1. Introduction

The M-6088-32 provides 32-channel PWM (Pulse Width Modulation) Output, and can be used to develop powerful and cost-effective analog control systems. PWM is a powerful technique for controlling analog circuits that uses the Digital Output to generate a waveform with a variable duty cycle and frequency which can then be used to control an analog circuit in applications such as controlling the position or speed of motors, the brightness of lamps, or the speed of fans, etc. Either burst mode or continuous mode can be used for the PWM output depending on the application. It supports both the Modbus RTU and the DCON protocols, and External PWR allows the load voltage to be increased from +5 to +40 V for the 32-channels PWM (Pulse Width Modulation) output.

When required, communication with the M-6088-32 can be programmed based on the Modbus RTU protocol, with the added benefit that different addresses can be configured via hardware to allow for Modbus RTU communication.

#### Features

- 32-channel PWM Output
- Burst Mode and Continuous Mode for PWM Output
- Individual and Synchronous PWM Output
- 4 kV ESD and EFT Protection
- Supports the DCON and the Modbus RTU Protocols
- Embedded Dual Watchdog
- Wide Operating Temperature Range: -25 to +75°C
- DIN-Rail Mounting or Wall Mounting

### Application

- Heating system in buildings
- Ventilation system
- Controlling Fan Speed





# 2. Hardware

## 2.1 Specifications

Model	M-6088-32				
PWM Output					
Channels	32				
Туре	Open Collector				
Sink/Source (NPN/PNP)	Sink				
Load Voltage	+5 ~ +40VDC				
Max.Load Current	+40VDC @ 200 mA/Channel				
PWM Frequency	50 Hz				
PWM Duty Cycle	0.1 to 99.9%				
Mode	Burst, Continuous				
Burst Count	1 to 65535				
Min. PWM Period	1ms				
Power-on Value	Yes				
Safe Value	Yes				
Communication					
Interface	RS-485 X 1				
Data Format	N,8,1 / O,8,1 / E,8,1 / N,8,2				
Baud Rate	1200 ~ 115200 bps				
Protocol	Modbus RTU or DCON				
Dual Watchdog	Yes, Module (1.6 seconds), Communication (Programmable)				
LED Indicators					
System	1 as Power/Communication Indicator (Red LED)				
Isolation					
Intra-module Isolation, Field-to-Logic	2500 VDC				
EMS Protection					
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminals				
	±8 kV Air for Random Point				
EFT (IEC 61000-4-4)	±4 kV for Power				
Surge (IEC 61000-4-5)	±2 kV for Power				
Power Requirements					

Reverse Polarity Protection	Yes					
Input Voltage Range	+10 ~ +48 VDC					
Consumption	1.0 W Max.					
Mechanical						
Dimensions (L x W x H)	116 mm x 120 mm x 64 mm					
Installation	Wall Mounting or DIN-Rail Mounting					
Environment						
Operating Temperature	-25 ~ +75°C					
Storage Temperature	-30 ~ +75°C					
Humidity	10 ~ 90% RH, Non-condensing					

#### 2.2 Appearance



#### **LED Indicators**

► PWR: Power/Communication Indicator

#### **PWM Outputs**

32-Channels Open Collector

#### Switch (SW1)

INIT Terminal Resister

#### 2.3 Pin Assignments



#### 2.4 Wire Connections



## 2.5 Internal I/O Structure



### 2.6 Switch (SW1)

SW1		ON	-
	4	OFF	-
4	2	ON	-
	3	OFF	-
	2	ON	Enable Terminal Resister
		OFF	Disable Terminal Resister (Factory default)
		ON	INIT Mode
		OFF	Normal Mode





# 3. Configuration via RS-485

- > The factory default settings for RS-485 communication
  - Address: 1
  - Protocol: Modbus/RTU
  - Baudrate: 9600
  - Parity: N,8,1
  - Response Delay (ms): 0

#### Note

If there are multiple M-6088-32 connected to the same RS-485 network, each module needs be set with a unique RS-485 address. More than one module having the same address will cause communication failure

- Testing RS-485 Communication
  - 1. Download the DCON Utility Pro from ICPDAS web site : <u>https://www.icpdas.com/en/download/DCON\_Utility\_Pro</u>
  - 2. Launch the DCON\_Utility\_Pro.exe.



3. Click the icon



to configure the COM port.

4. Select the COM Port number used to connect the M-6088-32 logger.

COM Port Search Options	×
COM4 COM1 COM3	Start 0 End 255
COM4 COM2	38400 19200
☑ 9600	2400 1200
Search RU-87PN Addr. Mode	e Timeout 300 ms
Start Search	Exit

5. The Baud Rate is factory default to 9600 bps.

CO	M Port Search Optic	ons				X
	COM4	•	Start 0	End	255	
	Baud Rate	Protocol Chec	ksum Form	at		1
	☑ 115200	57600	38400	19200		
	₹ 9600	4800	2400	1200		
	Search RU-8	7PN Addr. Mod	e Time	out 300	ms	1
	Search And	Get I/O Configu	urations			
	Start Sea	arch		Exit		

6. Select the Protocol tab.

COM Port Search Options			×
COM4	Start     0	End	255
Baud Rate Protocol C	hecksum Format	:	
DCON Mode	ous RTU 🔲 Moo	dbus ASCII	
Search RU-87PN Addr.	Mode Timeo	ut 300	ms
Search And Get I/O Co     Start Search	nfigurations	Exit	

7. Select the Format tab and check the parity that set in the logger.

COM Port Search Opt	ions				
COM4	•	Start	0	End	255
Baud Rate	Protocol Chec	ksum Fo	rmat		
<b>№ N,8,1</b>	N,8,2	E,8,1		0,8,1	
Search RU	-87PN Addr. Mod d Get I/O Configu	e T Irations	imeout	300	ms
Start S	earch			Exit	

8. Click the Start Search icon.



9. The M-6088-32 logger searched out will be listed as below.

18	DCON Utility Pro PC V 4.0.0.1 Beta Version Se	arching CON	//4	-					
	₹ ▶ II 🖹 🖨 MD	5	]		FAQ				
E	-COM4:*	ID	Address	Baud Rate	Checksum	Format	Status	Description	Comments
		608832	1[01h]	9600	Disabled	N,8,1	Remote I/O	[Modbus RTU]32*PWM	Supported

10.	Click the	module	name to	configure	the logaer.
		modulo	1101110 10	ooningaro	and loggen

608832 Firmware	[A102]					1.110				1.11	X
Configuration PWM	(CH:0 ~15)	PWM (CH:	16 ~32) Power C	n/Safe Status WI	OT Commands Log	Summary	About				
Protocol	Modbus R	TU	•								
Address	1	- 01	.H								
Baud Rate	9600		•								
Parity	N,8,1		•								
Checksum	Disabled		•								
Response Delay	0	ms							Set Modul	e Configurations	
Start Synchronized	d PWM	Stop Sy	nchronized PWM	PWM C	utput High/Low Level	1:	Level invers	e, Sequence	no inverse	•	
Exit	Save A	I PWM Co	nfigurations								

#### Note

The Protocol/Baud Rate/Parity/Checksum items marked with "(INIT\*)" means that when any of those items needs be modified, the pin 1.INIT needs to be set in ON position and power cycle the logger, then the item can be modified. After complete setting, set the pin 1.INIT back to OFF position and power cycle the logger again to take the setting effect.

$\triangleright$	PWI	/I ta	b	Burs	t Cou	Sy nt	nc. Start	F	PWM ON/OFF	Remained Burst Count
od (0~6	55.35 se	c)	Duty	Pu	lse N	lode	Sync. St	ор	PWM Status	
15 00883	32 Firmware[A	102]	/							
Configu	tion PWM (Cl	I:0 ~1	PWM (	H:16 ~32 Pov	ver On/Sa	e Statur	WDT Commands	l Jg Sum	ary About	
Perio	d ~655.35 se			st Cour Put	se Mere	S DC. St	art Sync. Stop		Start PWM PWM Status	Remained Burst Count
CH:00	000.50	50.0	0	Continuous			Apply PWM	OFF	0	Remained Barbe Counc
CH:01	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:02	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:03	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:04	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:05	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:06	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:07	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:08	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:09	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:10	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:11	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:12	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:13	000.10	03.0	0	Continuous			Apply PWM	OFF	0	
CH:14	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
CH:15	000.50	50.0	0	Continuous			Apply PWM	OFF	0	
								et all chanr	nels as CH0	
Start	Synchronized P	WM	Stop	Synchronized P	WM	PWM	Output High/Low L	evel	1: Level inverse, Sequence r	io inverse 🔹

#### Host Watchdog

Host Watchdog is used to monitor the RS-485 communication status; if the host (PC) does not send command "~\*\*" in the time period of WDT Timeout setting, the enabled Host Watchdog will announce the timeout error and turn the relay output to Safe value to avoid an unsafe act. Users can not control the relay until the command "~AA1" is sent to clear the WDT timeout status. On this tab:

- 1. Set the time period for WDT timeout, check the checkbox next to Enable WDT and click the Set WDT button to enable the Host watchdog.
- 2. Check the checkbox next to Send Host OK to send the "~\*\*" command.
- 3. Uncheck the checkbox next to Send Host OK to stop sending ~\*\* command, the Host watchdog timeout will occur and relay will turn to Safe value.
- 4. Click the Reset WDT button to clear the Host watchdog timeout status.
- 5. Uncheck the checkbox next to Enable WDT and click the Set WDT button to disable the Host watchdog.

Note

The relay will not turn to Safe value when alarm for detected liquid is enabled. If the alarm is enabled, the relay will be linked to the Alarm status. In case an Alarm occurs, the relay turns ON, it can be used to turn on the user's alarm light or beeping alarm or other device.

niguration   PVVP	(CH:0~15) P	WM (CH:16 ~32	) Power On/Saf	Status WDT	Commands Log Su	nmary About		
Enable WDT	📰 Enable	Output When	WDT Timeout					
VDT Timeout	1.00		Set Timer					
	(0.1	~ 25.5 sec)						
Reset Watchd	og Status							
Start. Synchronize	d PWM	Stop Synchron	ized PWM	PWM Output	.s High/Low Level	1: Level inverse, Sequenc	e no inverse	-

> INIT

In case of the following situations, users have to set the pin 1.INIT on SW1 in the ON position and power-cycle the M-6088-32 module:





- Change protocol from PC
- Change DCON configuration such as baud rate, parity and checksum
- Communication failure with a M-6088-32 module.

608832 Firmware[/	4102]								x
Configuration PWM (C	CH:0 ~15)	PWM (CH:16 ~3	2) Power On/Saf	e Status WDT 0	Commands Log Sum	mary About			
Protocol (INIT*)	DCON	-							
Address	0	(00H							
Baud Rate (INIT*)	9600	•							
Parity (INIT*)	N,8,1	•							
Checksum (INIT*)	Disabled	•							
Response Delay	0	ms							
							Set Module	e Configurations	
Start Synchronized	PWM	Stop Synchro	nized PWM	PWM Output	High/Low Level	1: Level inverse, S	equence no inverse	•	
Exit	Save A	PWM Configura	ations						

When a M-6088-32 module is powered-on with the pin 1.INIT in ON position, the protocol is DCON, address is 0, Baud Rate is 9600 bps, Parity is set to N/8/1 and Checksum is disabled.

After configuring the communication parameters, click the *Set Module Configurations* button, set the INIT to OFF position and power-cycle the M-6088-32 to take the settings effect.

#### Note

The INIT switch does not need to be set in the ON position when changing the address, baudrate and parity for ModbusRTU communication; users only have to power-cycle the module after complete configuration.

# Appendix A: DCON Command Sets

## A-1. M-6088-32 DCON Command Sets

Command	Description				
#AA1cDD	Channel PWM start/stop for lower 16 channels				
	c: channel number in hex, 0 ~ F for channel 0 to 15				
	DD: 00 for stop and 01 for start				
	response				
	> for OK				
	! for host watchdog timeout				
#AAAcDD	Channel PWM start/stop for lower 16 channels				
	c: channel number in hex, 0 ~ F for channel 0 to 15				
	DD: 00 for stop and 01 for start				
	response				
	>				
	! for host watchdog timeout				
#AABcDD	Channel PWM start/stop for upper 16 channels				
	c: channel number in hex, 0 ~ F for channel 16 to 31				
	DD: 00 for stop and 01 for start				
	response				
	>				
	! for host watchdog timeout				
%AANNTTCCFF	set configuration, NN: new address, TT = 00, CC: new baud rate, FF: bit 6 for DCON checksum				

Command	Description				
@AADI	Read PWM status of all channels				
	response				
	!AAHHHHHHH, HHHHHHHH in hex, each bit corresponds to a channel, where 0 for stopped and 1 for started				
@AADOHHHHHH	Start/stop PWM for all channels				
НН	HHHHHHH: in hex format, each bit corresponds to a channel, where 0 for stop and 1 for start				
\$AA2	Read configuration				
\$AA5	Read reset status				
	!AA1 first after power on, !AA0 others				
\$AACccB	Read channel burst count remained in burst mode				
	cc: channel in hex, 00 ~ 1F				
	response				
	!AAHHHH, HHHH in hex				
\$AACccD	Read channel duty cycle				
	cc: channel in hex, 00 ~ 1F				
	response				
	!AAdd.d				
\$AACccDdd.d	Set channel duty cycle				
	cc: channel in hex, 00 ~ 1F				
	dd.d: duty cycle, 00.0 ~ 99.9				

Command	Description				
\$AACccL	Read channel pulse period in second				
	cc: channel in hex, 00 ~ 1F				
	response				
	!AAdd.dd				
\$AACccLddd.dd	Set channel pulse period in second				
	cc: channel in hex, 00 ~ 1F				
	ddd.dd: pulse period, 000.00 ~ 655.35				
\$AACccN	Read channel sync mode				
	cc: channel in hex, 00 ~ 1F				
	response				
	!AAtp, t for sync start and p for sync stop, it can be 0 for disabled and 1 for enabled				
\$AACccNtp	Set channel sync mode				
	cc: channel in hex, 00 ~ 1F				
	t: sync start, 0 to disable and 1 to enable				
	p: sync stop, 0 to disable and 1 to enable				
\$AACccP	Read channel burst count				
	cc: channel in hex, 00 ~ 1F				
	response				
	!AAHHHH, HHHH in hex				
\$AACccPhhhh	Set channel burst count				
	cc: channel in hex, 00 ~ 1F				
	hhhh: burst count in hex				

Command	Description
\$AAF	read firmware version
\$AAI	read INIT status
	response:
	!AA0 -> INIT short to GND
	!AA1 -> else
\$AAM	read module name
\$AAP	Read Modbus RTU/DCON protocol
	response:
	!AA0 -> DCON
	!AA1 -> Modbus RTU
\$AAPN	Set Modbus RTU/DCON protocol
	N-> 0: DCON, 1: Modbus RTU
\$AAW	Save PWM configuration to EEPROM
\$AAYs	Sync start/stop all synced channels which are specified by the
	\$AACccNtp command
	s: 0 to stop and 1 to start
~**	clear host watchdog timeout counter
~AA0	read host watchdog status
~AA1	clear host watchdog timeout status
~AA2	read host watchdog enable/disable status and timeout value

Command	Description				
~AA3ETT	enable/disable host watchdog and set timeout value				
	E-> 0: disable host watchdog, 1: enable host watchdog				
	TT: host watchdog timeout in 0.1s in hex format				
~AA4P	Read the power on PWM settings				
	response:				
	!AAhhhhhhhh, hhhhhhhh in hex, each corresponds to a channel, 0 to stop and 1to start				
~AA4S	Read the safe PWM settings when host watchdog timeout				
	response:				
	!AAhhhhhhhh, hhhhhhhh in hex, each corresponds to a channel, 0 to stop and 1to start				
~AA6Phhhhhhhh	Set the power on PWM settings				
	Hhhhhhhh: in hex, each corresponds to a channel, 0 to stop and 1to start:				
~AA6Shhhhhhhh	Set the safe PWM settings when host watchdog timeout				
	Hhhhhhhh: in hex, each corresponds to a channel, 0 to stop and 1to start:				
~AAD	Read inverse settings				
	response:				
	!AAhh, hh in hex, bit 1 for inverse high/low level and bit 2 for inverse high/low sequence				

Command	Description
~AADhh	Set inverse settings
	hh: in hex, bit 1 for inverse high/low level and bit 2 for inverse high/low sequence
~AARD	read response delay time in ms in hex format response:
	!AAhh, hh in hex
~AARDVV	set response delay time in ms, VV in hex format, 00 - 59

## Baud Rate Setting (CC)

Bits 5:0

Baud rate,  $0x03 \sim 0x0A$ 

Code	0x03	0x04	0x05	0x06
Baud	1200	2400	4800	9600
Code	0x07	0x08	0x09	0x0A
Baud	19200	38400	57600	115200

Bits 7:6

00: no parity, 1 stop bit

01: no parity, 2 stop bits

10: even parity, 1 stop bit

11: odd parity, 1 stop bit

## Data Format Setting (FF)

Bit 6

0: checksum disabled

1: checksum enable

# Appendix B: ModbusMasterToolPC

ModbusMasterTooIPC is a free, easy-to-use tool for Modbus communication and diagnosing the wiring.

ICPDAS web site :https://www.icpdas.com/en/download/ModbusMasterTooIPC

This section intends to guide the steps for creating the Modbus communication with M-6088-32 logger.

- 1. Launch the ModbusMasterToolPC.exe.
- 2. Select *New* in the File menu.



3. Input the file name and click on the **Save** button.

Create a New File								X
00	- 👢 « Moo	dbusMasterToolPC	<ul> <li>Configuration</li> </ul>	File 🕨 UserDefined		▼ 😽 搜尋 Use	erDefined	P
組合管理▼ 新増資料夾 20 20 20 20 20 20 20 20 20 20 20 20 20								
	名稱	A		修改日期	類型	大小		
	M-60	88-32.mmt		2021/10/15 下午	MMT 檔案	1 KB		
	MyFile	eWork.mmt		2021/6/4 下午 02	MMT 檔案	1 KB		
ĩ								
(iii)								
		1						
棺	當案名稱(N):	M-6088-32.mmt						•
न	存檔類型(T):	Modbus Master To	ol Files (*.mmt)					-
● 隱藏資	料夾				2	存檔(S)	取消	

4. Select *Connect* in the *Connection* menu.

🔯 Modi	bus Master Tool V1.1.5.0	2021/06/04I:\Download	\ModbusMasterToolPC\Configuration File	
File	Setup Connection \	Nindow About		
	Connect			
	Disconnect			
	Master0			
	Slave ID = 1, FC =	= 4		
	Error = 0			
	AI (3x) Base 0	Value Descripti	on	
	0 (0x0)	0		
	1 (0x1)	0		
	2 (0x2)	0		
	3 (0x3)	0	=	
	4 (0x4)	0	~	
	5 (0x5)	0		
	6 (0x6)	0		
	7 (0x7)	0		
	8 (0x8)	0		
	9 (0x9)	0	-	
Disconn	ect			.::

5. Select the communication interface.

🔟 Conne	ect			the later of the later	X
	Interface:	COM4	•	Scan Interval(ms):	220
	Baudrate:	9600	•	Timeout(ms):	200
	Data Bit:	8	•	Delay Between Poll(ms):	20
	Parity:	0-None	Parity 🔻		
	Stop Bit:	1	•		
	Mode:	◉ RTU	© ASCII	Cancel	ОК

When using RS-485 as the interface, select the COM port, check the RTU mode and click on the **OK** button.

6. Select *Definition* in the Setup menu.

🔟 Modbus Master Tool V1.1.5.0 2021/06/04I:\Download\ModbusMasterToolPC\Configuration File 🗔 💷 🗮 🗶				
File	Setup Connection Window About			
	Definition			
	New Window			
	Set Value			
	Set Description			
M COOO 20 Linear Mercural				

7. Select the Modbus function code, input the start address and length, and click on the **OK** button.

Definition	X
Slave ID: 1	ОК
Type: Read Coils Status (0xxxx) for DO	
Addresses:  Base 0 Base 1	Cancel
Address: 1	
Length: 32 00001 to	00032
Format: Singed Int16	
Descriptions: 🔲 Clear All Descriptions	

#### 8. Read data.

🔝 Modbus Master Tool V1.1.5.0 2021/06/04I:\Download\ModbusMasterToolPC\Configuration File 🗔 💷 🗮 🏧				
🔟 File Setup	Connection V	Vindow About	- 8 ×	
Slave ID = 1,	FC = 1			
Error = 0				
DO (0x) Base	e 1 Value	Description	<u>^</u>	
00001 =	1			
00002 =	0			
00003 =	0		=	
00004 =	0			
00005 =	0			
00006 =	0			
00007 =	0			
00008 =	0			
00022 =	0			
00023 =	0			
00024 =	0			
00025 =	0			
00026 =	0			
00027 =	0			
00028 =	0			
00029 =	0		=	
00030 =	0			
00031 =	1			
00032 =	1		-	
Connection is est	ablished. Serial Por	rt= COM4		

- 9. Write data to Holding Register or Coil Status
  - 1. Highlight the Modbus address in the Holding Register or Coil Status list
  - 2. Select **Set Value** in the Setup menu.
  - 3. Input the data in the Value box and click on the OK button



# Appendix C: Modbus Address Table

## C-1. M-6088-32 Modbus Address Mappings (Base 1)

Address	Description	Attribute
00001 ~ 00032	PWM status 0: Stop 1: Start	R/W
00129 ~ 00160	PWM safe value when host communication timeout 0: Stop 1: Start	R/W
00161 ~ 00192	Power on value of the PWM status 0: Stop 1: Start	R/W
00257	Protocol 0: DCON 1: Modbus RTU	R/W
00260	Modbus Host Watchdog mode 0: The same as I-7000 series modules 1: The AO and DO command will clear Host Watchdog timeout status	R/W
00261	Host Watchdog 0: Disabled 1: Enabled	R/W
00266	Inverse the PWM output level 0: No inverse 1: Inverse	R/W

Address	Description	Attribute
00267	Inverse the pulse output high/low sequence 0: low then high 1: high then low	R/W
00270	Host Watchdog timeout status, write 1 to clear the Host Watchdog timeout status	R/W
10273	Reset status 0: Not the first read after power-on 1: First read after power-on	R
00289	Save all PWM configurations into EEPROM, write 1 to save	W
00290	Sync start/stop 0: sync stop 1: sync start	W
00961 ~ 00992	Enable/disable channel PWM sync start	R/W
00993 ~ 01024	Enable/disable channel PWM sync stop	R/W
30481	Firmware version (low word)	R
30482	Firmware version (high word)	R
30483	Module name (low word)	R
30484	Module name (high word)	R
40485	The module address, valid range: 1 ~ 247	R/W

Address	Description				Attribute	
40486	Bits 5:0 Baud Rate, 0x03 ~ 0x0A			R/W		
	Code	0x03	0x04	0x05	0x06	
	Baud	1200	2400	4800	9600	
	Code	0x07	0x08	0x09	0x0A	
	Baud	19200	38400	57600	115200	
	Bits 7:6					
	00:	No parit	y, 1 stop	bit		
	01: 10:	No parit	y, 2 stop rity 1 st	DItS on hit		
	11:	Odd par	ity, 1 sto	p bit		
40488	Response delay time in ms, valid range: 0 ~ R/V 89			R/W		
40489	Host Watchdog timeout value, 0 ~ 255, in 0.1s R/			R/W		
40492	Host watchdog timeout count, write 0 to clear		R/W			
40673 ~ 40704	PWM pulse period in 0.01s, 0 to 65535, 0 for always low.		R/W			
40705 ~ 40736	PWM duty cycle in 0.1%, 0 to 1000, 0 for always low, 1000 for always high			R/W		
30769 ~ 30800	PWM burst count remained in burst mode			R		
40801 ~ 40832	PWM burst count, 0 for continuous mode			R/W		

# **Revision History**

Revision	Date	Description
1.0.0	2021/10	First released