CONFIGURATION Details for FPEM Models

Contents

RENU ELECTRONICS PVT. LTD.

Register Configuration for High-Speed Input

For Channel1

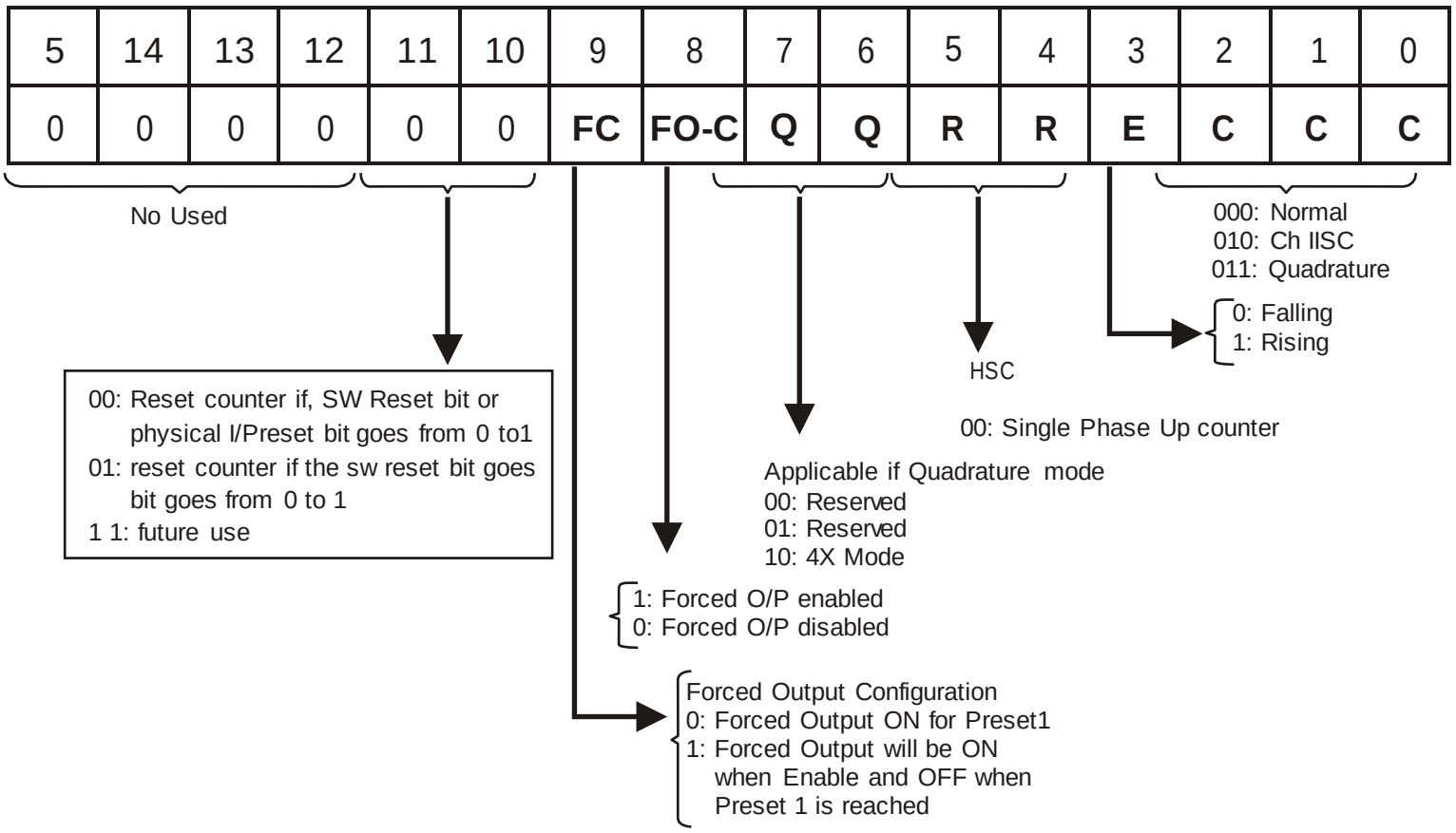
Register Description	Register Number X0(CH1)	Attribute	Value in Register /Range
Slotxx_CH1_HSC_ConfigReg	MWxx00	Read/Write	2(Single Phase Counter) 387(4X Quadrature)*
Slotxx_CH1_HSC_Register	MWxx01	Read Only	4294967295 (32-bit data)
Slotxx_CH1_Preset_Register	MWxx03	Read/Write	4294967295 (32-bit data)
Slotxx_CH1_HSC_EnableBit	Mxx080	Read/Write	Output is enabled when ON
Slot01_CH1_HSC_ResetBit	Mxx081	Read/Write	Count Reset (ON/OFF)
Slotxx_CH1_HSC_PresetReached	Mxx083	Read Only	ON/OFF
Slotxx_CH1_Rate_Reg	XWxx01	Read Only	4294967295 (32-bit data)
Slotxx_CH1_Rate_Span_Register	MWxx12	Read/Write	0.1 to 71.5 sec
Slotxx_CH1_RateSpanSettingErrFlag	Mxx184	Read Only	ON/OFF

For Channel2

Register Description	Register Number X2(CH3)	Attribute	Value in Register /Range
Slotxx_CH3_HSC_ConfigReg	MWxx06	Read/Write	2(Single Phase Counter) 387(4X Quadrature)*
Slotxx_CH3_HSC_Register	MWxx07	Read Only	4294967295 (32-bit data)
Slotxx_CH3_Preset_Register	MWxx09	Read/Write	4294967295 (32-bit data)
Slotxx_CH3_HSC_EnableBit	Mxx176	Read/Write	Output is enabled when ON
Slot01_CH3_HSC_ResetBit	Mxx177	Read/Write	Count Reset (ON/OFF)
Slotxx_CH3_HSC_PresetReached	Mxx179	Read Only	ON/OFF
Slotxx_CH3_Rate_Reg	XWxx03	Read Only	4294967295 (32-bit data)
Slotxx_CH3_Rate_Span_Register	MWxx14	Read/Write	0.1 to 71.5 sec
Slotxx_CH3_RateSpanSettingErrFlag	Mxx472	Read Only	ON/OFF

[Note : x refers to slot number. E.g. for first slot replace xx with 01 x refers to channel number. E.g. for first channel replace x with 1.]

FOR HIGH SPEED COUNTER INPUTS (ALL FPEM MODELS)



FOR ANALOG INPUTS

Register Description	Register Number				Attribute	Value in Register / Range
	CH1	CH2	CH3	CH4		
Slotxx_CHX_Analog Input Type	MWxx60	MWxx62	MWxx63	MWxx64	Read/Write	1 : Voltage input 0-10V 6 : Voltage input 0-5V 18: Voltage input -10 to +10V 5 : millivolt input 0-50mV 4 : millivolt input 0-100mV 3 : Current input 0-20mA 2 : Current input 4-20mA 7 : RTD input alpha1:(-200 to 850ºC) 8 : RTD input alpha2:(-100 to 457ºC) 9 : PT 1000 14: Thermocouple J:(-210 to 1200ºC) 15: Thermocouple K:(-200 to 1373ºC)
Slotxx_CHX_Analog Input Register	XWxx11	MWxx13	MWxx15	MWxx17	Read Only	Reads voltage/current input
Slotxx_CHX_Analog_IP _NormalisationFactor	MWxx64	MWxx65	MWxx66	MWxx67	Read/Write	0 to 100

[Note: xx refers to slot number. E.g. for first slot replace xx with 01, x refers to channel number. E.g. for first channel replace x with 1.]

FOR ANALOG OUTPUTS

(FPEM0808RP0401U, FPEM 0808P0401U, FPEM 1210RP0201L, FPE1210P0201L)

Register Description	Register Number	Attribute	Value in Register / Range
	V out / I out		
Slotxx_CHX_Analog Output Type	MWxx68	Read/Write	2 : Voltage output 0-10V 1 : 0-5V 5 : Current output 4-20mA 6 : Current output 0-20mA
Slotxx_CHX_Analog Output Current Register	XWxx02	Read/Write	0 to 4095
Slotxx_CHX_Analog Output voltage Register	MWxx01	Read/Write	0 to 4095

FOR PWM OUTPUTS

NORMAL PWM MODE CONFIGURATION

Here we can configure 2 channels.

Register Description	Register Number		Attribute	Value in Register / Range
	Y0(CH1)	Y1(CH2) z		
PWM Configure Reg	MWxx24	MWxx30	Read/Write	Put value 1*
Frequency / Min Freq Setting Reg	MWxx25	MWxx31	Read/Write	As per product
ON duty / Max Freq Setting Reg	MWxx27	MWxx33	Read/Write	As per product
Pulse Enable Flag	Mxx576	Mxx577	Read/Write	Output is enabled when ON
ON duty setting error flag	Mxx466	Mxx471	Read Only	ON at error (reset OFF automatically)
Frequency Setting error flag	Mxx467	Mxx472	Read Only	ON at error (reset OFF automatically)

[Note : xx refers to slot number. E.g. for first slot replace xx with 01.]

***If user put config value 2: User can change frequency even if pulse enable flag is ON.**

CW / CCW MODE CONFIGURATION

Here we can configure 1 channel by using Y0 and Y1 output.

Register Description	Register Number		Attribute	Value in Register / Range
	Y0(CH1)	Y1(CH2)		
PWM Configure Reg	MWxx24	MWxx30	Read/Write	Put value 3*
Frequency /Min Freq Setting Reg	MWxx25	MWxx31	Read/Write	As per product
Pulse Enable flag	Mxx576	Mxx577	Read/Write	Output is enabled when ON
Frequency Setting error flag	Mxx467	Mxx472	Read Only	ON at error (reset OFF automatically)

*** If user put config value 4: User can change frequency even if pulse enable flag is ON.**

PULSE / DIR MODE CONFIGURATION

Here we can configure 1 channel by using Y0 and Y1 output.

Register Description	Register Number		Attribute	Value in Register / Range
	Y0(CH1)	Y1(CH2)		
PWM Configure Reg	MWxx24	MWxx30	Read/Write	Put value 7*
Frequency /Min Freq Setting Reg	MWxx25	MWxx31	Read/Write	As per product
Pulse Enable flag	Mxx576	Mxx577	Read/Write	Output is enabled when ON
Frequency Setting error flag	Mxx467	Mxx472	Read Only	ON at error (reset OFF automatically)

*** If user put config value 8: User can change frequency even if pulse enable flag is ON.**

FIXED PULSE MODE CONFIGURATION

Here we can configure 2 channels.

Register Description	Register Number		Attribute	Value in Register / Range
	Y0(CH1)	Y1(CH2)		
PWM Configure Reg	MWxx24	MWxx30	Read/Write	Put value 9*
Frequency /Min Freq Setting Reg	MWxx25	MWxx31	Read/Write	As per product
ON duty /Max Freq Setting Reg	MWxx27	MWxx33	Read/Write	As per product
Pulse Enable flag	Mxx576	Mxx577	Read/Write	Output is enabled when ON
Acceleration Time	MWxx37	MWxx38	Read/Write	0 to 65535 (x10mSec base)
Deceleration Time	MWxx39	MWxx43	Read/Write	0 to 65535 (x10mSec base)
Total Pulses	MWxx41	MWxx43	Read/Write	0 to 4294967295
Elapsed Value	MWxx45	MWxx47	Read Only	0 to 4294967295
Frequency Setting error flag	Mxx467	Mxx472	Read Only	ON at error (reset OFF automatically)
Acceleration Time Setting error flag	Mxx468	Mxx473	Read Only	Turns ON at error
Deceleration Time Setting error flag	Mxx468	Mxx474	Read Only	Turns ON at error
No of Total Pulses Setting error flag	Mxx470	Mxx475	Read Only	Turns ON at error
End of Total Pulses flag	Mxx784	Mxx785	Read Only	Turns ON at error
Trapezoidal Min.Pulse Count Register	Mwxx50	Mwxx52	Read Only	0 to 4294967296

PWM O/P Specifications	FPEM-1616P	FPEM-1614RP	FPEM-1212P-A0200L	FPEM 1210P -A0201L	FPEM1210RP-A0201L	FPEM -1210P -A0200U	FPEM -0808P -A0401U	FPEM -0808RP -A0401U
Number of O/P	2 PNP open collector							
O/P channels	Y0, Y1							
Isolation	Isolated from 24VDC power, Communication and USB ground							
Max. O/P frequency	1Khz for PWM mode and up to 5Khz for PTO					200Khz		

Analog Count Details

FPEM-0808P-A0401U

Voltage Input

Input type : 0 to 10V		
Channel No	Applied Input	Ideal Count
1	0V	0
	2.5V	16384
	5V	32768
	7.5V	49152
	10V	65535

Input Type : 1 to 5V		
Channel No	Applied Input	Ideal Count
1	1V	13107
	2V	26214
	3V	39321
	4V	52428
	5V	65535

Input type : 0 to 100mv		
Channel No	Applied Input	Ideal Count
1	0mV	0
	25mV	16384
	50mV	32768
	75mV	49152
	100mV	65535

Input Type : 0 to 50mv		
Channel No	Applied Input	Ideal Count
1	0mV	0
	12.5mV	16384
	25mV	32768
	37.5mV	49152
	50mV	65535

Current Input

Input type : 0 to 20mA		
Channel No	Applied Input	Ideal Count
1	0mA	0
	5mA	16384
	10mA	32768
	15mA	49152
	20mA	65535

Input type : 4 to 20mA		
Channel No	Applied Input	Ideal Count
1	4mA	0
	8mA	16384
	12mA	32768
	16mA	49152
	20mA	65535

Input type: K type Thermocouple (-200ºC to 1373ºC)		
Channel No	Applied Input	Ideal Count
1	-200°C	-2000
	0°C	0
	300°C	3000
	750°C	7500
	1372°C	13720
	25°C	250

Input type: J type Thermocouple (-210ºC to 1200ºC)		
Channel No	Applied Input	Ideal Count
1	-200°C	-2000
	-100°C	-1000
	0°C	0
	5°C	50
	250°C	2500
	600°C	6000
	900°C	9000
	1100°C	11000
	1200°C	12000
	25°C	250

Resistance Input

Alpha 1(-200 to 850°C)

Input Type: RTD(PT100)		
Channel No	Applied Input	Ideal Count
1	0°C	0
	100°C	1000
	400°C	4000
	651°C	6510
	850°C	8500

Alpha 2(-100 to 457°C)

Input Type: RTD(PT100)		
Channel No	Applied Input	Ideal Count
1	0°C	0
	100°C	1000
	250°C	2500
	350°C	3500
	457°C	4570

FPEM-1210RP-A0201L

Voltage Input

Input type: 0 to 10V		
Channel No	Applied Input	Ideal Count
1	0V	0
	2.5V	16000
	5V	32000
	7.5V	48000
	10V	64000

Input Type: 1 to 5V		
Channel No	Applied Input	Ideal Count
1	1V	12800
	2V	25600
	3V	38400
	4V	51200
	5V	64000

Current Input

Input type: 0 to 20mA		
Channel No	Applied Input	Ideal Count
1	0mA	0
	5mA	16000
	10mA	32000
	15mA	48000
	20mA	64000

Input type: 4 to 20mA		
Channel No	Applied Input	Ideal Count
1	4mA	0
	8mA	16000
	12mA	32000
	16mA	48000
	20mA	64000

Revision History

Revision	Description	Date	Prepared by	Approved by
1.0	First Draft	21/11/2018	PM	AR
1.1	Revised Register Configuration details for High-Speed Input	03/04/2019	PM	AR
1.2	Revised Register Configuration Values	09/05/2019	PM	AR