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[?]	**DOCUMENT TRANSMITTAL**	Contract N/A

Nuclear Division 4600 East Tech Drive, Cincinnati, OH 45245 T: 513.528.7900 | F: 513.528.4537	Number DT226571	Customer/Vendor Purchase Order Number N/A
Originated By Hover, Margie	Originated Date 11/22/2022	Project 10CFR Part 21 Notification

Name	Company	Email
Headquarters Operation Officer	U.S. Nuclear Regulatory Commission	hoo.hoc@nrc.gov

Document Number	Rev	Document Type	Qty	For...
Interim Report for 10CFR Part 21 Notification	N/A	Report	1	Final Record

Remarks	
Contact Information for Originator of Part-21 Notification: TIM FRANCHUK Curtiss-Wright Nuclear Division Director of Quality (513) 201-2176, tfranchuk@curtisswright.com Interim Report for 10CFR Part 21 Notification for QualTech NP supplied Eaton TRM5 Timing Relays. U.S. Nuclear Regulatory Commission ATTN: NRC Document Control Desk Washington, DC 20555-0001 Phone: (301) 816-5100 Fax: (301) 816-5151	ACKNOWLEDGMENT: Please confirm receipt of the referenced documentation by replying "YES" to the email you received. The referenced documentation will default to a status of UNCONTROLLED if your "YES" reply is not received within 30 days.
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Transmitted By Harrison, Jennifer	Transmitted Date 11/30/2022

020-07-91 Rev. 6

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CURTISS – WRIGHT

November 28, 2022

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Interim Report for 10CFR Part 21 Notification for QualTech NP supplied Eaton TRM5 timing relays

Dear Sir or Madam:

This notification is being provided as a potential 10 CFR Part 21 issue. During dedication of Eaton time delay relays TMR5N22120 for Energy Harbor Purchase Order 45676362 QualTech NP discovered the presence of a programmable logic device, specifically Microchip P/N 12F615 I/SN2114, which is a flash-based CMOS microcontroller. A review of data from past Energy Harbor orders for this family of relays was performed and showed that this same logic device was also present but was not identified.

The QualTech NP qualification for this family of relays is a Mild Environment, Seismic only application, reference SQURTS Report S1807.0, Revision 1.

The affected orders are attached along with Manufacturer cutsheets on the chip in question. No QualTech NP customer other than Energy Harbor is affected by this notice. As the specific application(s) at Energy Harbor is unknown, QualTech NP cannot determine if the programmable logic device could affect the safety related function of this relay. The plant should evaluate whether the installed relays are subjected to unevaluated EMI/RFI conditions when installed in the plant.

QualTech NP investigation with this issue is ongoing.

Please phone (513) 528-7900 if you should have any questions.

Sincerely,

Tim Franchuk
Quality Assurance Director
QualTech NP, Curtiss-Wright Nuclear Division
Office: 513-528-7900, ext. 176

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Affected Orders

Customer	Plant	PO #	Mfg. Part #	QualTech NP Job #
Energy Harbor	Perry 1	45529688	TMR5N15120	CJ14538
Energy Harbor	Perry 1	45537060	TMR5N04120	CJ14941
			TMR5N08120	
			TMR5N22120	
Energy Harbor	Perry 1	45546965	TMR5N04120	CJ15428
			TMR5N08120	
			TMR5N22120	
Energy Harbor	Perry 1	45565421 R1	TMR5N04120	CJ16439
Energy Harbor	Perry 1	45565487 R1	TMR5N08120	CJ16441
			TMR5N22120	
Energy Harbor	Perry 1	45664144	TMR5N04120	CJ17918
Energy Harbor	**Perry 1**	**45676362**	**TMR5N22120**	**CJ18824**

* PO # 45676362 is current order, parts have not shipped to customer

MICROCHIP

PIC12F609/615/617
PIC12HV609/615

Data Sheet

8-Pin, Flash-Based 8-Bit
CMOS Microcontrollers

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.

- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.

- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.

- Microchip is willing to work with the customer who is concerned about the integrity of their code.

- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

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═ ISO/TS 16949:2002 ═

MICROCHIP PIC12F609/615/617/12HV609/615

8-Pin Flash-Based, 8-Bit CMOS Microcontrollers

High-Performance RISC CPU:

- Only 35 Instructions to Learn:
  - All single-cycle instructions except branches
- Operating Speed:
  - DC – 20 MHz oscillator/clock input
  - DC – 200 ns instruction cycle
- Interrupt Capability
- 8-Level Deep Hardware Stack
- Direct, Indirect and Relative Addressing modes

Special Microcontroller Features:

- Precision Internal Oscillator:
  - Factory calibrated to ±1%, typical
  - Software selectable frequency: 4 MHz or 8 MHz
- Power-Saving Sleep mode
- Voltage Range:
  - PIC12F609/615/617: 2.0V to 5.5V
  - PIC12HV609/615: 2.0V to user defined maximum **(see note)**
- Industrial and Extended Temperature Range
- Power-on Reset (POR)
- Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Brown-out Reset (BOR)
- Watchdog Timer (WDT) with independent Oscillator for Reliable Operation
- Multiplexed Master Clear with Pull-up/Input Pin
- Programmable Code Protection
- High Endurance Flash:
  - 100,000 write Flash endurance
  - Flash retention: > 40 years
- Self Read/ Write Program Memory (PIC12F617 only)

Low-Power Features:

- Standby Current:
  - 50 nA @ 2.0V, typical
- Operating Current:
  - 11 µA @ 32 kHz, 2.0V, typical
  - 260 µA @ 4 MHz, 2.0V, typical
- Watchdog Timer Current:
  - 1 µA @ 2.0V, typical

Note: Voltage across the shunt regulator should not exceed 5V.

Peripheral Features:

- Shunt Voltage Regulator (PIC12HV609/615 only):
  - 5 volt regulation
  - 4 mA to 50 mA shunt range
- 5 I/O Pins and 1 Input Only
- High Current Source/Sink for Direct LED Drive
  - Interrupt-on-pin change or pins
  - Individually programmable weak pull-ups
- Analog Comparator module with:
  - One analog comparator
  - Programmable on-chip voltage reference (CVREF) module (% of VDD)
  - Comparator inputs and output externally accessible
  - Built-In Hysteresis (software selectable)
- Timer0: 8-Bit Timer/Counter with 8-Bit Programmable Prescaler
- Enhanced Timer1:
  - 16-bit timer/counter with prescaler
  - External Timer1 Gate (count enable)
  - Option to use OSC1 and OSC2 in LP mode as Timer1 oscillator if INTOSC mode selected
  - Option to use system clock as Timer1
- In-Circuit Serial Programming™ (ICSP™) via Two Pins
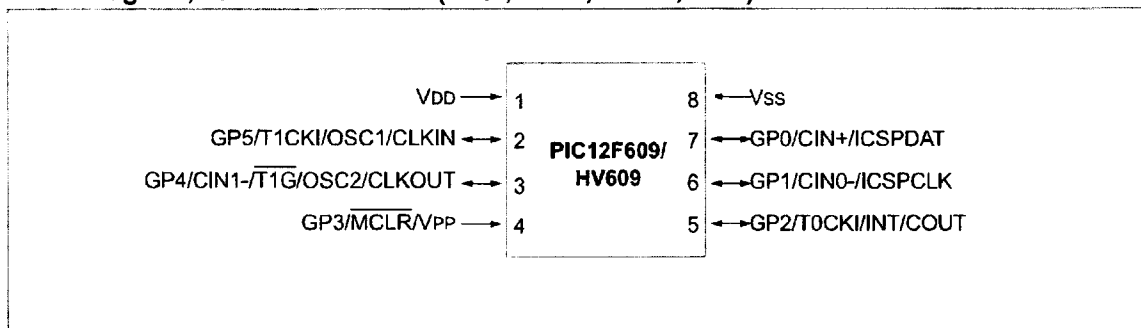
PIC12F615/617/HV615 ONLY:

- Enhanced Capture, Compare, PWM module:
  - 16-bit Capture, max. resolution 12.5 ns
  - Compare, max. resolution 200 ns
  - 10-bit PWM with 1 or 2 output channels, 1 output channel programmable "dead time," max. frequency 20 kHz, auto-shutdown
- A/D Converter:
  - 10-bit resolution and 4 channels, samples internal voltage references
- Timer2: 8-Bit Timer/Counter with 8-Bit Period Register, Prescaler and Postscaler

PIC12F609/615/617/12HV609/615

Device	Program Memory Flash (words)	Data Memory SRAM (bytes)	Self Read/ Self Write	I/O	10-bit A/D (ch)	Comparators	ECCP	Timers 8/16-bit	Voltage Range
PIC12F609	1024	64	—	5	0	1	—	1/1	2.0V-5.5V
PIC12HV609	1024	64	—	5	0	1	—	1/1	2.0V-user defined
PIC12F615	1024	64	—	5	4	1	YES	2/1	2.0V-5.5V
PIC12HV615	1024	64	—	5	4	1	YES	2/1	2.0V-user defined
PIC12F617	2048	128	YES	5	4	1	YES	2/1	2.0V-5.5V

8-Pin Diagram, PIC12F609/HV609 (PDIP, SOIC, MSOP, DFN)

```
        VDD ──▶ |1        8| ◀── Vss
GP5/T1CKI/OSC1/CLKIN ◀─▶ |2   PIC12F609/   7| ◀─▶ GP0/CIN+/ICSPDAT
GP4/CIN1-/T1G/OSC2/CLKOUT ◀─▶ |3   HV609     6| ◀─▶ GP1/CIN0-/ICSPCLK
   GP3/MCLR/VPP ──▶ |4        5| ◀─▶ GP2/T0CKI/INT/COUT
```

TABLE 1:   PIC12F609/HV609 PIN SUMMARY (PDIP, SOIC, MSOP, DFN)

I/O	Pin	Comparators	Timer	Interrupts	Pull-ups	Basic
GP0	7	CIN+	—	IOC	Y	ICSPDAT
GP1	6	CIN0-	—	IOC	Y	ICSPCLK
GP2	5	COUT	T0CKI	INT/IOC	Y	—
GP3[1]	4	—	—	IOC	Y[2]	MCLR/VPP
GP4	3	CIN1-	T1G	IOC	Y	OSC2/CLKOUT
GP5	2	—	T1CKI	IOC	Y	OSC1/CLKIN
—	1	—	—	—	—	VDD
—	8	—	—	—	—	Vss

Note 1: Input only.

     2: Only when pin is configured for external MCLR.

8-Pin Diagram, PIC12F615/617/HV615 (PDIP, SOIC, MSOP, DFN)


```
                  VDD  ──▶ | 1        8 | ◀── Vss
GP5/T1CKI/P1A*/OSC1/CLKIN ◀─▶| 2  PIC12F615/  7 | ◀─▶ GP0/AN0/CIN+/P1B/ICSPDAT
GP4/AN3/CIN1-/T1G/P1B*/OSC2/CLKOUT ◀─▶| 3  617/HV615  6 | ◀─▶ GP1/AN1/CIN0-/VREF/ICSPCLK
      GP3/T1G*/MCLR/VPP ──▶| 4        5 | ◀─▶ GP2/AN2/T0CKI/INT/COUT/CCP1/P1A
```

* Alternate pin function.
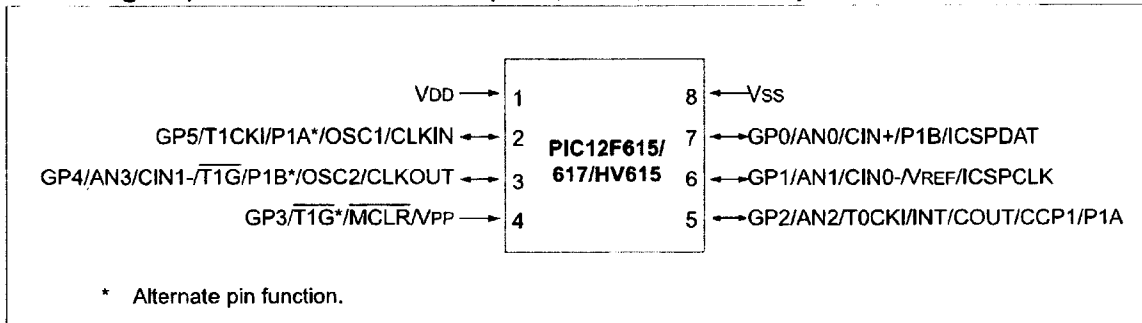
TABLE 2: PIC12F615/617/HV615 PIN SUMMARY (PDIP, SOIC, MSOP, DFN)

I/O	Pin	Analog	Comparators	Timer	CCP	Interrupts	Pull-ups	Basic
GP0	7	AN0	CIN+	—	P1B	IOC	Y	ICSPDAT
GP1	6	AN1	CIN0-	—	—	IOC	Y	ICSPCLK/VREF
GP2	5	AN2	COUT	T0CKI	CCP1/P1A	INT/IOC	Y	—
GP3[(1)]	4	—	—	T1G*	—	IOC	Y[(2)]	MCLR/VPP
GP4	3	AN3	CIN1-	T1G	P1B*	IOC	Y	OSC2/CLKOUT
GP5	2	—	—	T1CKI	P1A*	IOC	Y	OSC1/CLKIN
—	1	—	—	—	—	—	—	VDD
—	8	—	—	—	—	—	—	VSS

* Alternate pin function.

Note 1: Input only.

2: Only when pin is configured for external MCLR.

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.

PART NO.	X	/XX	XXX
Device	Temperature Range	Package	Pattern

Device:	PIC12F609, PIC12F609T[1], PIC12HV609, PIC12HV609T[1], PIC12F615, PIC12F615T[1], PIC12HV615, PIC12HV615T[1], PIC12F617, PIC12F617T[1]
Temperature Range:	H = -40°C to +150°C (High Temp)[3] I = -40°C to +85°C (Industrial) E = -40°C to +125°C (Extended)
Package:	P = Plastic DIP (PDIP) SN = 8-lead Small Outline (150 mil) (SOIC) MS = Micro Small Outline (MSOP) MF = 8-lead Plastic Dual Flat, No Lead (3x3) (DFN) MD = 8-lead Plastic Dual Flat, No Lead (4x4)(DFN)[1,2]
Pattern:	QTP, SQTP or ROM Code; Special Requirements (blank otherwise)

Examples:

a) PIC12F615-E/P 301 = Extended Temp., PDIP package, 20 MHz, QTP pattern #301
b) PIC12F615-I/SN = Industrial Temp., SOIC package, 20 MHz
c) PIC12F615T-E/MF = Tape and Reel, Extended Temp., 3x3 DFN, 20 MHz
d) PIC12F609T-E/MF = Tape and Reel, Extended Temp., 3x3 DFN, 20 MHz
e) PIC12HV615T-E/MF = Tape and Reel, Extended Temp., 3x3 DFN, 20 MHz
f) PIC12HV609T-E/MF = Tape and Reel, Extended Temp., 3x3 DFN, 20 MHz
g) PIC12F617T-E/MF = Tape and Reel, Extended Temp., 3x3 DFN, 20 MHz
h) PIC12F617-I/P = Industrial Temp., PDIP package, 20 MHz
i) PIC12F615-H/SN = High Temp., SOIC package, 20 MHz

Note 1: T = in tape and reel for MSOP, SOIC and DFN packages only.
2: Not available for PIC12F617.
3: High Temp. available for PIC12F615 only.