CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**

2. **Certificate No:** **FM17CA0072X**

3. **Equipment:**
   (Type Reference and Name) **Stonel Quartz QN and QC Series Valve Position Monitor**

4. **Name of Listing Company:** **Valmet Flow Control Inc. (MN)**

5. **Address of Listing Company:** **26271 US Highway 59,**
   Fergus Falls, Minnesota 56537, USA

6. The examination and test results are recorded in confidential report number:

   3033392 dated 5th September 2008

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

   CSA C22.2 No. 0.4:2017 (R2022), CSA C22.2 No. 0.5:2016 (R2020), CSA C22.2 No. 25:1966 (R2014), CSA C22.2 No. 30:1986 (R2016), CSA C22.2 No. 94:2015, CSA C22.2 No. 157-92:2012, CSA C22.2 No. 213:2015, CSA C22.2 No. 60079-0:2019, CSA C22.2 No. 60079-1:2016, CSA C22.2 No. 60079-11:2014, CSA C22.2 No. 60529:2016, CSA C22.2 No. 61010-1:2016

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

    See Annex

11. The marking of the equipment shall include:

    See Annex

12. **Description of Equipment:**

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

15 April 2024
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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The Stonel Quartz Valve Position Monitor is an IP rated enclosure with sensing and communication electrical options mounted within. The monitor is designed to be attached to various valve/actuator assemblies to monitor and communicate a valve's position.

The enclosure consists of an aluminum or stainless-steel enclosure base with a polymer or a tool securable aluminum or stainless-steel screw on/off cover allowing access to the internally mounted sensing and communication electrical options of various designs.

Electrical options include "Dual Module" Namur sensors, "Maxx-Guard" proximity sensors, P + F Namur sensors, Transmitter options and Potentiometers options.

- The Dual Module sensors consist of two (top & bottom) solid-state switches which are activated by a rotating shaft with adjustable targets mounted within plastic cams.
- The Maxx-Guard proximity sensors consist of multiple reed switches which are activated by a rotating shaft with adjustable targets mounted within plastic cams. The PCBA and components are encapsulated.
- The Namur "_N" proximity models consist of multiple solid-state inductive proximity sensors (P + F NJ2-V3-N-V5, PTB00ATEX2032X) which are activated by a rotating shaft with adjustable targets mounted within plastic cams.
- The Namur "_A" proximity models consist of multiple solid-state inductive proximity sensors (P + F NJ2-12GK-SN, PTB00ATEX2049X) which are activated by a rotating shaft with adjustable targets mounted within plastic cams.
- The Namur "_B" proximity models consist of multiple solid-state inductive proximity sensors (P + F NJ5-30GK-S1N, PTB00ATEX2049X) which are activated by a rotating shaft with adjustable targets mounted within plastic cams.
- The Transmitter option "5O" and "7O" consist of a direct drive potentiometer wired to a pcb that creates a 4-20mA signal. The transmitter option can include additional switches/sensors by replacing the second digit "O" with a sensor option digit (example "5N" or "7N", etc…). Therefore the "transmitter" parameters (for "5" and "7") are listed separately from the additional switch/sensor parameters ("N" or any other sensor option).
- The Transmitter option "TO" consists of a solid-state sensing circuit that provides a 4-20mA signal. The transmitter option can include additional switches/sensors by replacing the second digit "O" with a sensor option digit (example "TR", etc…). Therefore the "transmitter" parameters (for "T") are listed separately from the additional switch/sensor parameters ("R" or any other sensor option).
- The Potentiometer option "BO" and "CO" consist of a direct drive potentiometer that provides a variable resistance signal. The potentiometer option can include additional switches/sensors by replacing the second digit "O" with a sensor option digit (example "BN", etc…). Therefore the "potentiometer" parameters (for "B") are listed separately from the additional switch/sensor parameters ("N" or any other sensor option).

Various junction options allow field wiring connections to related electrical and communication systems which enter the enclosure through a cable entry and connect to terminals of a terminal block.

The monitor is available with varied configurations for the external mounting/rotating shaft connections and external visual indication options.

Branding option digits are applicable to the appropriate market outlet. Options digits are applied only when authorized special arrangements have been made.

See Annex for specific model information.

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13. **Specific Conditions of Use:**

1. Part of the enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned with a damp cloth.
2. The apparatus enclosure may contain aluminum which is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
5 September 2008	Original Issue.
11 May 2017	Supplement 3: Report Reference: RR208761 dated 11th May 2017. Description of the Change: Model code updates (remove function option K). Transfer to new certificate format.
31 July 2018	Supplement 4: Report Reference: 3064023 dated 31st July 2018. Description of the Change: Removed Approval Guide code from description. Added sensor module option “T_”.
9 October 2019	Supplement 5: Report Reference: PR452032 dated 9th October 2019. Description of the Change: Addition of “2B” function option. Revision to “96”, “97”, “86”, and “87” function options. Removed 2X, 5X, 7X, BX, and CX function options. Added “QC” section. Addition of IP66. “5_” and “7_” function option parameters changes. Function option “_A” parameters corrected. Updated documentation.
21 April 2020	Supplement 6: Report reference – RR222856 dated 21st April 2020. Description of the Change: Company name change.

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Date	Description
15 April 2024	Supplement 7: Report Reference: RR235861 dated 15 April 2024. Description of the Change(s): ◦ Documentation and model code updates. ◦ Updated Equipment Description. ◦ Corrections made to list of standards identified in section 7.

ANNEX

QCabcdef-g.Valve Position Monitor.

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups ABCDEFG, T5, IP66
Intrinsically Safe Ex ia for Class I, Zone 0, Group IIC T5, IP66

Markings:

Intrinsically Safe Class I, II, III Division I Groups ABCDEFG T5 = -50°C to +80°C
Class I Zone 0, Ex ia IIC T5 = -50°C to +80°C
IP66

Description of Equipment:

*When a = 45
For Divisions T5 Ta* = -50ºC to +80ºC; For T6 Ta* = -50°C to +65°C
For Zones T5 Ta* = -50ºC to +80ºC; For T6 Ta* = -50°C to +65°C

Energy Limitation Parameters:
Sensor Module: Ui = 22V, Ii = 120 mA, Pi = 0.4W, Ci = 3 nF, Li = 0 H
Solenoid Connection Terminals: Ui = 30V, Ii = 120mA

Model Code:
a = Function: 45
b= Enclosure: E, B, S or J
c= Junction: 03.
d= Output: X, S, N or H
e= Visual Indication: X, G, R, C, 1, 2, 3, 4, 5, 0, N, D, A, S, T, U, V or W.
f= Branding: A or M
g= Options: A dash symbol (-) followed with up to 5 alpha or numeric identification digits after model number for special and marketing purposes. Option digits are not normally applied.

QNabcdef-g. Valve Position Monitor.

Equipment Ratings:

Nonincendive for Class I, II, II, Division 2, Groups ABCDEFG, T5; Type 4, 4X, 6, IP66, IP67

Markings:

Class I, II, III Division 2 Groups ABCDEFG T5 = -40C to +80C; Type 4, 4X, 6, IP66, IP67

Description of Equipment:

*When a = 2E, 4E, 5E, 7E, BE, CE, 2F, 4F, 5F, 7F, BF or CF, Ta = -25°C to +70°C

Model Code:
a = Function 2P, 4P, 5P, 7P, BP, CP, 2L, 4L, 5L, 7L, BL, CL, 2H, 4H, 5H, 7H, BH, CH, 2S, 4S, 5S, 7S, BS, CS, 2G, 4G, 5G, 7G, BG, CG, 4X, 6X, 2E, 4E, 5E, 7E, TE, BE, CE, 2F, 4F, 5F, 7F, TF, BF, CF, 35, 5T, 7T, TT, BT, CT, 92, 93, 96, or 97.
b = Enclosure C, E, P, B, Y, S, U or J
c = Junction 02 or 03
d = Output X, S, N, or H
e = Visual Indication X, G, R, C, 1, 2, 3, 4, 5, 0, N, D, A, S, T, U, V or W
f = Branding A, or M
g = Options: A dash symbol (-) followed with up to 5 alpha or numeric identification digits after model number for special and marketing purposes. Option digits are not normally applied.
Note: 'Special Unit Digits' do not affect the integrity of the housing, the electrical safety, or the title plate.

QNabcdef-g. Valve Position Monitor.

Equipment Ratings:

Nonincendive for Class I, II, II, Division 2, Groups ABCDEFG, T5;
Intrinsically Safe for Class I, II, III, Division 1, Groups ABCDEFG, T6...T1;
Intrinsically Safe Ex ia for Class I, Zone 0 Group IIC T6...T1
T_{amb} = -40ºC to +80ºC; Type 4, 4X, 6, IP66, IP67

Markings:

Class I, II, III Division 2 Groups ABCDEFG T5 T_{amb} = -40ºC to +80ºC; Type 4, 4X, 6, IP66, IP67
Intrinsically Safe Class I, II, III Division 1 Groups ABCDEFG T6...T1 T_{amb} = -40ºC to +80ºC; Type 4, 4X, 6, IP66, IP67
Class I, Zone 0, Ex ia IIC T6...T1 Ga T_{amb} = -40ºC to +80ºC; Type 4, 4X, 6, IP66, IP67

Description of Equipment:

Model Code:
a = Function 2J, 4J, 5J, 7J, BJ, CJ, 2M, 4M, 5M, 7M, BM, CM, 5O, 7O, TO, BO, CO, 2N, 4N, 5N, 6N, 7N, TN, BN, CN, 2A ,4A, 5A, 7A, TA, BA, CA, 2B, 45, 5R, 7R, TR, BR or CR
b = Enclosure C, E, P, B, Y, S, U or J
c = Junction 02 or 03.
d = Output X, S, N, or H.
e = Visual Indication X, G, R, C, 1, 2, 3, 4, 5, 0, N, D, A, S, T, U, V or W.
f = Branding A, or M
g = Options: A dash symbol (-) followed with up to 5 alpha or numeric identification digits after model number for special and marketing purposes. Option digits are not normally applied.
Note: 'Special Unit Digits' do not affect the integrity of the housing, the electrical safety, or the title plate

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*When a = 5O, 7O
For T4, Ta = -40ºC to +80ºC
Entity Parameters: Ui = 30 Vdc, Ii = 100 mA, Ci = 66 nF, Li = 0 H, Pi = 0.75 W

*When a = TO
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters:
Transmitter: Ui = 30 Vdc, Ii = 100 mA, Ci = 3 nF, Li = 0 H, Pi = 0.75 W
Solenoid Connection Terminals: Ui = 30 Vdc, Ii = 120 mA

*When a = BO, CO
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters: Ui = 26 V, Ii = 14 mA, Pi = 50 mW, Ci = 0 nF, Li = 0 mH

*When a = 2J, 4J, 2M, 4M
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters:
Switch/Sensor: Ui = 30V, Ii = 100 mA, Pi = 2.0W, Ci = 66 nF, Li = 0.8 mH

*When a = 5J, 7J, 5M, 7M
For T4, Ta = -40ºC to +80ºC
Energy Limitation Parameters:
Switch/Sensor: Ui = 30V, Ii = 100 mA, Pi = 2.0W, Ci = 66 nF, Li = 0.8 mH
Transmitter: Ui = 30V, Ii = 100 mA, Pi = 2.0W, Ci = 66 nF, Li = 0 H, Pi = 0.75 W

*When a = BJ, CJ, BM, CM
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters:
Switch/Sensor: Ui = 30V, Ii = 100 mA, Pi = 2.0W, Ci = 66 nF, Li = 0.8 mH
Transmitter: Ui = 26V, Ii = 14 mA, Pi = 50mW, Ci = 0 nF, Li = 0 mH

*When a = 45
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters:
Sensor Module: Ui = 22V, Ii = 120 mA, Pi = 0.4 W, Ci = 3 nF, Li = 0 mH
Solenoid Connection Terminals: Ui = 30V, Ii = 120mA

*When a = 5R, 7R
For T4, Ta = -40ºC to +80ºC
Energy Limitation Parameters:
Sensor Module: Ui = 22V, Ii = 120 mA, Pi = 0.4W, Ci = 3 nF, Li = 0 mH
Solenoid Connection Terminals: Ui = 30V, Ii = 120 mA
Transmitter: Ui = 30 Vdc, Ii = 100 mA, Ci = 66 nF, Li = 0 H, Pi = 0.75 W

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*When a = TR
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters:
Sensor Module: Ui = 22Vdc, Ii = 120 mA, Pi = 0.4W, Ci = 3 nF, Li = 0 mH
Solenoid Connection Terminals: Ui = 30V, Ii = 120 mA
Transmitter: Ui = 30 Vdc, Ii = 100 mA, Ci = 3 nF, Li = 0 H, Pi = 0.75 W
Solenoid Connection Terminals: Ui = 30V, Ii = 120 mA

*When a = BR, CR
For T5 Ta* = -40ºC to +80ºC; For T6 Ta* = -40°C to +65°C
Energy Limitation Parameters:
Sensor Module: Ui = 22V, Ii = 120 mA, Pi = 0.4 W, Ci = 3 nF, Li = 0 mH
Solenoid Connection Terminals: Ui = 30V, Ii = 120mA
Potentiometer: Ui = 26V, Ii = 14 mA, Pi = 50mW, Ci = 0 nF, Li = 0 mH

* When a = 2N, 4N, 6N

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-25°C to +56°C	-25°C to +68°C	-25°C to +80°C	16	25	34	40	0.05
-25°C to +49°C	-25°C to +61°C	-25°C to +80°C	16	25	64	40	0.05
-25°C to +28°C	-25°C to +40°C	-25°C to +68°C	16	52	169	40	0.05
-25°C to +13°C	-25°C to +25°C	-25°C to +53°C	16	76	242	40	0.05

* When a = 5N, 7N
Switch/Sensor:

For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-25°C to +80°C	16	25	34	40	0.05
-25°C to +80°C	16	25	64	40	0.05
-25°C to +68°C	16	52	169	40	0.05
-25°C to +53°C	16	76	242	40	0.05

Transmitter; Ui = 30Vdc, Ii = 100 mA, Ci = 66 nF, Li = 0 H, Pi = 0.75 W

* When a = TN
Switch/Sensor:

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-25°C to +56°C	-25°C to +68°C	-25°C to +80°C	16	25	34	40	0.05
-25°C to +49°C	-25°C to +61°C	-25°C to +80°C	16	25	64	40	0.05
-25°C to +28°C	-25°C to +40°C	-25°C to +68°C	16	52	169	40	0.05
-25°C to +13°C	-25°C to +25°C	-25°C to +53°C	16	76	242	40	0.05

Transmitter: Ui = 30 Vdc, Ii = 100 mA, Ci = 3 nF, Li = 0 H, Pi = 0.75 W
Solenoid Connection Terminals: Ui = 30 Vdc, Ii = 120 mA

* When a = BN, CN
Switch/Sensor:

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-25°C to +56°C	-25°C to +68°C	-25°C to +80°C	16	25	34	40	0.05
-25°C to +49°C	-25°C to +61°C	-25°C to +80°C	16	25	64	40	0.05
-25°C to +28°C	-25°C to +40°C	-25°C to +68°C	16	52	169	40	0.05
-25°C to +13°C	-25°C to +25°C	-25°C to +53°C	16	76	242	40	0.05

Potentiometer: Ui = 26V, Ii = 14 mA, Pi = 50mW, Ci = 0 nF, Li = 0 mH
* When a = 2A, 4A

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-40°C to +57°C	-40°C to +69°C	-40°C to +80°C	16	25	34	50	0.15
-40°C to +52°C	-40°C to +64°C	-40°C to +80°C	16	25	64	50	0.15
-40°C to +34°C	-40°C to +46°C	-40°C to +74°C	16	52	169	50	0.15
-40°C to +22°C	-40°C to +34°C	-40°C to +61°C	16	76	242	50	0.15

* When a = 5A, 7A
Switch/Sensor:

For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH

-40°C to +80°C	16	25	34	50	0.15
-40°C to +80°C	16	25	64	50	0.15
-40°C to +74°C	16	52	169	50	0.15
-40°C to +61°C	16	76	242	50	0.15

Transmitter; Ui = 30Vdc, Ii = 100 mA, Ci = 66 nF, Li =0 H, Pi = 0.75 W
* When a = TA
Switch/Sensor:

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-40°C to +57°C	-40°C to +69°C	-40°C to +80°C	16	25	34	50	0.15
-40°C to +52°C	-40°C to +64°C	-40°C to +80°C	16	25	64	50	0.15
-40°C to +34°C	-40°C to +46°C	-40°C to +74°C	16	52	169	50	0.15
-40°C to +22°C	-40°C to +34°C	-40°C to +61°C	16	76	242	50	0.15

Transmitter: Ui = 30 Vdc, Ii = 100 mA, Ci = 3 nF, Li = 0 H, Pi = 0.75 W
Solenoid Connection Terminals: Ui = 30 Vdc, Ii = 120 mA
* When a = BA, CA
Switch/Sensor:

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-40°C to +57°C	-40°C to +69°C	-40°C to +80°C	16	25	34	50	0.15
-40°C to +52°C	-40°C to +64°C	-40°C to +80°C	16	25	64	50	0.15
-40°C to +34°C	-40°C to +46°C	-40°C to +74°C	16	52	169	50	0.15
-40°C to +22°C	-40°C to +34°C	-40°C to +61°C	16	76	242	50	0.15

Potentiometer: Ui = 26V, Ii = 14 mA, Pi = 50mW, Ci = 0 nF, Li = 0 mH
*When a = 2B

For T6 Ta*=	For T5, Ta*=	For T4…T1, Ta*=	Ui V	Ii mA	Pi mW	Ci nF	Li mH
-25°C to +57°C	-25°C to +69°C	-25°C to +80°C	16	25	34	100	0.2
-25°C to +52°C	-25°C to +64°C	-25°C to +80°C	16	25	64	100	0.2
-25°C to +34°C	-25°C to +46°C	-25°C to +74°C	16	52	169	100	0.2

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-25°C to +22°C	-25°C to +34°C	-25°C to +61°C	16	76	242	100	0.2

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