



## Technical Service Bulletin (TSB) for the Metrix MX2034 DPS - Extreme Low Vibration Output Issue

Date of Occurrence: 30 March 2020

Supplier: Metrix Instrument Company

Part No/Serial/No: MX2034-AA-BB-CC-DD-EE-FFF-GG Digital Proximity System (DPS) with SNs less than 114020 where

- EE = 01 and 04 (Vibration)
- FFF = 001 (3 mils), 002 (4 mils), 003 (5 mils), 021 (100 $\mu$ m), or 022 (150 $\mu$ m)

Severity: Medium

RCA Leader: Matthew Webster

### Issue:

MX2034 transmitters with DPS version 1.35 software/firmware do not show a proportional 4-20 mA transmitter output with vibration less than 0.5 mils pp (12.5  $\mu$ m pp). The output is displayed at a constant 4 mA output until the vibration levels are over 0.5 mils pp (12.5  $\mu$ m pp).

For input vibration levels that are greater than 0.5 mils pp (12.5  $\mu$ m pp) the 4-20 mA transmitter output is proportional to the scale range selected and is accurate.

### Details:

Given:

- a) Due to the combination of a very low-level vibration signal and some industrial installations where electrical noise has been observed to affect the 4-20 milliamp (mA) signal, a filter setting within the MX2034 DPS was used to eliminate low vibration noise signals less than 0.5 mils pp (12.5  $\mu$ m pp).
- b) The raw signal output from the associated BNC or Output Pins, when using the 4-Pin MX2034 Vibration Transmitter, is not impacted by this same filter.
- c) The filter would effectively eliminate any vibration signal, on the 4-20 mA output, less than 0.5 mils pp (12.5  $\mu$ m pp) and display it at 4 mA's. At greater than 0.5 mils pp (12.5  $\mu$ m pp) vibration input the 4-20 mA output was proportional to the input given the Full-Scale Range of the MX2034 Transmitter.
- d) Metrix was testing the MX2034 at 0 Vibration amplitude to verify 4 mA output response. Metrix was not verifying 4-20 mA vibration response between 0 and less than 1 mil pp (25  $\mu$ m pp).

Findings:

- a) By adjusting the filter setting within the MX2034 DPS, to eliminate low vibration noise signals less than 0.5 mils pp (12.5  $\mu$ m pp), the MX2034 Transmitter could accurately report low vibration signals down to 0.1 mils pp (2.5  $\mu$ m pp) with a 4-20 mA proportional output. The noise floor of the MX2034 DPS is 20 mV or 0.1 mils pp (2.5  $\mu$ m pp).
- b) Metrix needs to test the MX2034 DPS at less 0.5 mils pp (12.5  $\mu$ m pp) to verify a proper 4-20 mA response.



## Recommended Actions

Recommended Actions:

1. No action is necessary if the MX2034 Transmitter DPS 1.35 application has vibration greater than 0.5 mils pp (12.5  $\mu\text{m}$  pp).
2. If the MX2034 Transmitter DPS 1.35 application of the product requires operation less than 0.5 mils pp (12.5  $\mu\text{m}$  pp), update the DPS unit by simply using the free software on the Metrix Website and connecting to the MX2034 via the USB. The DPS Software will prompt you to update the MX2034 if required. The latest release of the DPS Software can be found at the following link, <http://www.metrixvibration.com/products/proximity/digital-proximity-system/product/655/mx2033-3-wire-driver>

## Long-Term Preventive Actions – Metrix Specific

PA Status: (On Going)

1. As noted above, for new production units, Metrix has properly adjusted the filter that was affecting the 4-20 mA output at extremely low vibration amplitudes less than 0.5 mils pp (12.5  $\mu\text{m}$  pp).

Lance Truong  
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