Product Advisory

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Introduction

This document advises BE1-FLEX users of a potential issue which could lead to a false operation of the 87 element used for differential protection. Prompt correction of this issue is highly recommended by Basler Electric Company.

Affected Products

All BE1-FLEX protective systems with firmware version 1.01.00 or below and protection style option “E” (BE1-FLEX x-xxxxxxxx-xx-xx-xxx-Exxx-xx). BE1-FLEX systems affected by this advisory have serial numbers over the range of E02877811 through E03208122.

Issue Description

A firmware issue was identified on the BE1-FLEX that causes circuits used in the differential (87) protection zone to be associated with different frequency sources. The frequency source provides the reference point for each circuit and with different references may cause the circuits used in the 87 zone to sample incorrectly. This can create errors in current calculations and if large enough, can cause a false operation of the 87 element. For reliable operation, all circuits within the 87 zone must use the same frequency source.

The issue is most prevalent when a circuit is operating near its minimum current level, potentially transitioning in and out of range for detecting frequency, and is followed by a sudden increase in current. Since the circuits are not using the same frequency source, the transient condition can cause the frequency to appear to be different between the circuits for a short period of time causing calculation errors.

Temporary Solution

The issue can be resolved by using the Virtual Circuit feature in the BE1-FLEX. A virtual circuit is used to create a mathematical sum of two or more real circuits. When creating a virtual circuit, all circuits assigned to the virtual circuit are also associated with a common frequency source.

For example, if the 87 uses circuits 1 and 2, then virtual circuit 3 can be defined as: Virtual Circuit3 = Circuit1 + Circuit2. Since the virtual circuit definition forces a common frequency source to be used for circuits 1 and 2, the circuits are inherently common for the 87 zone as well. It is not necessary to use virtual circuit 3 for any other function, only the definition is needed.

Permanent Solution

A permanent solution to this issue is to update the BE1-FLEX firmware to version 1.01.01 or above. Utilization of the virtual circuit is not necessary with firmware version 1.01.01 or above.

To obtain a firmware update, please contact Basler Technical Sales Support at +1 618.654.2341 (USA), +86 512.8227.2888 (China), or +65 68.44.6445 (Singapore).