TULSA Water and Sewer Department

SCADA System Improvements

Analog Trip Reset Add-On Instruction

FINAL

PRESENTED TO

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Revision History

After the Add-On Instruction has been modified or updated, this document should be revised to reflect the changes. The version is broken into two parts: major (**X**.0) and minor (1.**X**). A major version is reserved for adding or removing sections of this document. A minor version is reserved for modifications to existing sections.

Version	Date	Description
1.0	July 9, 2021	AOI created in Studio 5000 Version 21.11, Draft submitted to client
1.0	April 4, 2022	Final submitted to client.

1   INTRODUCTION

The Analog Trip Reset Add-On Instruction (AOI) provides alarm functionality for an analog signal. The AOI can be configured to alarm for high or low analog conditions utilizing trip and reset setpoints and adjustable time delays. This AOI is embedded in the Analog Input AOI four times, one for each of the high-high, high, low, and low-low alarms.
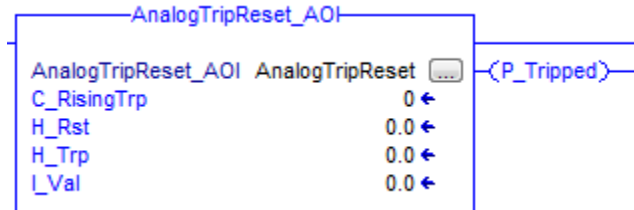

Figure 1-1 Analog Trip Reset AOI as it appears in ladder logic

2   FEATURES

2.1   Configuration Tags

Configuration tags are inputs to the AOI that are set by the engineer during programming and equipment start-up. A "C_" prefix is used to indicate that the tag modifies the configuration of an equipment or instrument.

Table 2-1 Configuration Tags

Parameter	Data Type	Description	Default Value
C_Permsv	BOOL	External signal mapped into the AOI to allow the alarm to become active.	False
C_RisingTrp	BOOL	Determines the direction for how the alarm becomes active. If true, P_Tripped is activated if I_Val is greater than or equal to H_Trp. If false, P_Tripped is activated if I_Val is less than or equal to H_Trp.	False

2.2   Input Tags

Input tags are inputs to the AOI that are set by the I/O and indicate equipment status. The "I_" prefix is used to indicated that the tag is displaying an equipment or instrument status.

Table 2-2 Input Tags

Parameter	Data Type	Description
I_Val	REAL	Analog Input signal mapped into the AOI to use for alarming.

2.3   Output Tags

Output tags are outputs from the AOI that are used to control equipment. The "O_" prefix is used to indicate that the tag controls a real-world output within the PLC. The Analog Trip Reset AOI does not contain any output tags.

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2.4   HMI Tags

HMI tags are inputs to the AOI that are set by the operator. The "H_" prefix is used to indicate that the tag modifies a PLC register from the operator interface.

Table 2-3 HMI Tags

Parameter	Data Type	Description	Default Value
H_Rst	REAL	Reset setpoint to clear the alarm.	2
H_RstDlySec	REAL	Time required for the value to be below (if rising trip) or above (if falling trip) the reset setpoint before the alarm clears.	5
H_Trp	REAL	Trip setpoint to activate the alarm.	3
H_TrpDlySec	REAL	Time required for the value to be above (if rising trip) or below (if falling trip) the trip setpoint before the alarm is activated.	5

2.5   PLC Logic Tags

PLC Logic tags are attributes internal to the AOI. The "P_" prefix is used to indicate that the tag is modified or calculated within the PLC.

Table 2-4 PLC Logic Tags

Parameter	Data Type	Description
P_Tripped	BOOL	Trip alarm. Activated when the trip delay timer expires and held on until the reset delay timer expires.

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