TULSA Water and Sewer Department

SCADA System Improvements

Motor Stats Add-On Instruction

FINAL

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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.

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1 INTRODUCTION

The Motor Stats Add-On Instruction (AOI) reads a running signal from a motor and calculates runtime and number of starts statistics. Current and previous hourly, daily, weekly, monthly, yearly, and cumulative statistics are included. This AOI is used inside the Motor, MotorMeter, and MotoVFD AOIs to calculate the motor statistics.
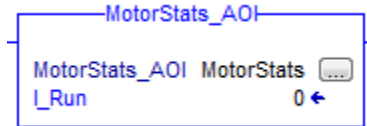

Figure 1-1 Motor Stats AOI as it appears in ladder logic

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_DayOfWk	INT	PLC clock – day of week	0
C_DayRst	BOOL	PLC clock – day reset	False
C_MthRst	BOOL	PLC clock – month reset	False
C_YrRst	BOOL	PLC clock – year reset	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_Run	BOOL	Motor running input.

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 Motor Stats 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_CmtvRst	BOOL	Cumulative statistic reset.	False
H_StatRst	BOOL	Statistics reset.	False

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_OffTmLRun	REAL	Off time last run cycle.
P_OffTmLRunHr	DINT	Off time last run cycle hours.
P_OffTmLRunMin	REAL	Off time last run cycle minutes remainder.
P_OffTmRun	REAL	Off time this run cycle.
P_OffTmRunHr	DINT	Off time this run cycle hours.
P_OffTmRunMin	REAL	Off time this run cycle minutes remainder.
P_RTmCmtv	REAL	Run time cumulative.
P_RTmLMth	REAL	Run time last month.
P_RTmLMthHr	DINT	Run time last month hours.
P_RTmLMthHr	REAL	Run time last month minutes remainder.
P_RTmLRun	REAL	Run time last run cycle.
P_RTmLRunHr	DINT	Run time last run cycle hours.
P_RTmLRunMin	REAL	Run time last run cycle minutes remainder.
P_RTmLWk	REAL	Run time last week.
P_RTmLWkHr	DINT	Run time last week hours.
P_RTmLWkMin	REAL	Run time last week minutes remainder.
P_RTmLYr	REAL	Run time last year.
P_RTmLYrHr	DINT	Run time last year hours.
P_RTmLYrMin	REAL	Run time last year minutes remainder.
P_RTmMth	REAL	Run time this month.
P_RTmMthHr	DINT	Run time this month hours.
P_RTmMthMin	REAL	Run time this month minutes remainder.
P_RTmRun	REAL	Run time this run cycle.
P_RTmRunHr	DINT	Run time this run cycle hours.
P_RTmRunMin	REAL	Run time this run cycle minutes remainder.
P_RTmTday	REAL	Run time today.
P_RTmTdayHr	DINT	Run time today hours.

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P_RTmTdayMin	REAL	Run time today minutes remainder.
P_RTmWk	REAL	Run time this week.
P_RTmWkHr	DINT	Run time this week hours.
P_RTmWkMin	REAL	Run time this week minutes remainder.
P_RTmYday	REAL	Run time yesterday.
P_RTmYdayHr	DINT	Run time yesterday hours.
P_RTmYdayMin	REAL	Run time yesterday minutes remainder.
P_RTmYr	REAL	Run time this year.
P_RTmYrHr	DINT	Run time this year hours.
P_RTmYrMin	REAL	Run time this year minutes remainder.
P_StrtsCmtv	DINT	Number of starts cumulative
P_StrtsLMth	DINT	Number of starts last month.
P_StrtsMth	DINT	Number of starts this month.
P_StrtsTday	DINT	Number of starts today.
P_StrtsYday	DINT	Number of starts yesterday.
P_StrtsYr	DINT	Number of starts this year.

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