

**Title:** Reading Sigma-5 and Sigma-7 Drive Monitors in MotionWorks IEC

**Product(s):** MP3□□□iec, MP2□□□iec, Sigma-5, Sigma-7

**Doc. No.** TN.MWIEC.04

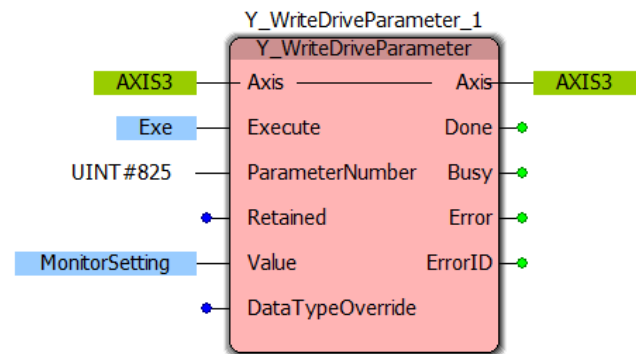
## Overview

Mechatrolink SERVOPACKs have built-in monitor functions (Un□□□) that are typically read using SigmaWin+ or a digital operator. These monitors can also be read in an MPieC controller. This document describes the method to read drive monitors using MotionWorks IEC. This is a two-part process: (1) Choosing which monitor to read, and (2) reading the monitor value.

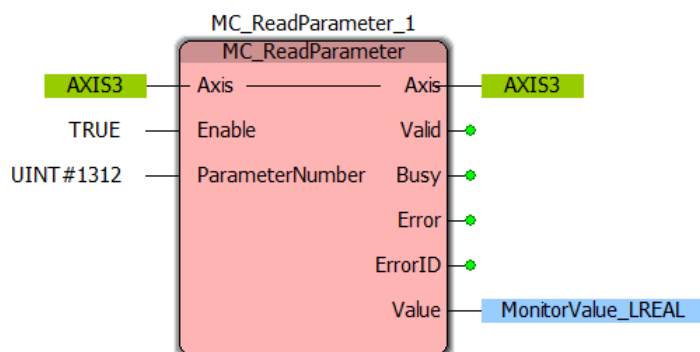
## Choosing which value to monitor

The value to be monitored is determined by the setting of Pn825. This determines the value that will be written to the shared output parameter 1312. Pn825 value is written using the Y\_WriteDriveParameter function block found in the PLCOpenPlus\_v\_2\_2a firmware library.

The "Value" input to this block is a DINT and determines which monitor is written to Prm1312. The table in the Appendix shows the allowable settings for this value.



## Viewing the monitor value



After setting the value of Pn825, parameter Prm1312 will contain the selected monitor. Use function block MC\_ReadParameter to read this value.

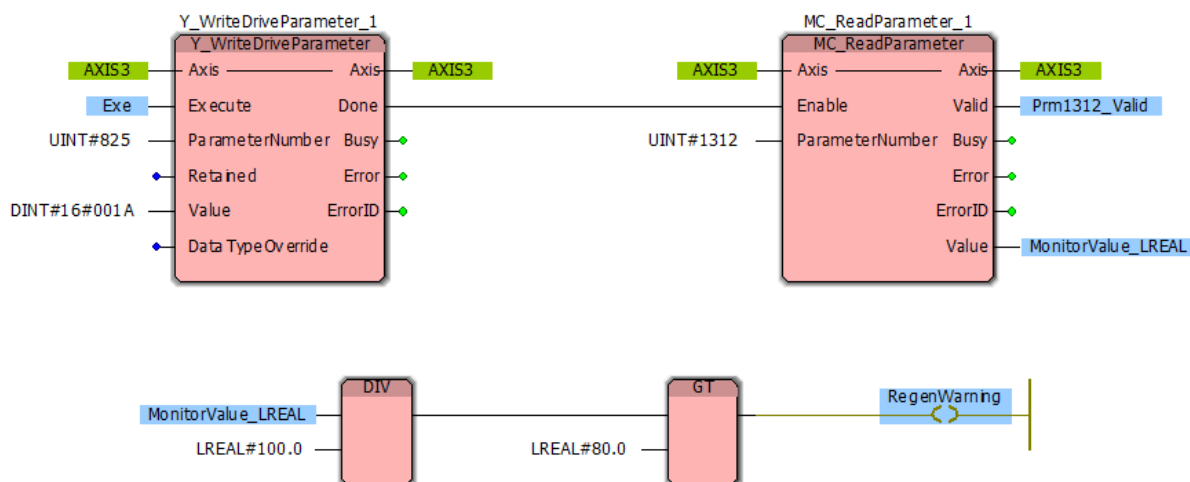
NOTE: MC\_ReadParameter Value output is an LREAL value, but the data in Prm1312 is actually a DINT value stored as an LREAL.

## Example

The example code below will set BOOL variable "RegenWarning" to true if the Regenerative Load Ratio climbs to 80% or higher.

(\*Writes value of 16#001A (Un00A: Regenerative Load Ratio [%]) to Prm825. The monitor data is written to Prm1312.\*)

(\*Reads Prm1312. The Value output is an LREAL but the data in Prm1312 is DINT, so data conversion may be required. If the Regenerative Load is at 63.45%, the MC\_ReadParameter FB returns 6345.000.\*)



(\*Divide the Prm1312 value by 100 to get the correct percentage value, then compare it to 80.0. If the Prm1312 value is greater than 80.0, turn out the output.\*)

## Appendix

| Pn825 Value | Prm1312                                     | Units       | Monitor Number | Notes   |
|-------------|---|-------------|----------------|---|
| 16#0010     | Motor Speed                                 | [rpm]       | Un000          | MC_ReadActualVelocity is a better option.         |
| 16#0011     | Speed Reference                             | [rpm]       | Un001          |   |
| 16#0012     | Torque Reference                            | [%]         | Un002          | MC_ReadActualTorque is a better option.           |
| 16#0013     | Encoder Pulses from Origin                  | [pulse]     | Un003          | Pulses from origin within one revolution          |
| 16#0014     | Rotational Angle                            | [deg]       | Un004          | Angle from origin within one revolution           |
| 16#0015     | Input Sigma Monitor                         | -           | Un005          |   |
| 16#0016     | Output Signal Monitor                       | -           | Un006          |   |
| 16#0017     | Input Reference Speed                       | [rpm]       | Un007          |   |
| 16#0018     | Position Error                              | [ref units] | Un008          |   |
| 16#0019     | Accumulated Load Ratio                      | [%]         | Un009          |   |
| 16#001A     | Regenerative Load Ratio                     | [%]         | Un00A          |   |
| 16#001B     | Dynamic Brake Resistor Power Consumption    | [%]         | Un00B          |   |
| 16#001C     | Input Ref. Pulse Counter                    | [ref units] | Un00C          |   |
| 16#001D     | Feedback Pulse Counter                      | [pulse]     | Un00D          |   |
| 16#001E     | Full-Closed Loop Feedback Pulse Counter     | [pulse]     | Un00E          |   |
| 16#0023     | Initial Multiturn Data                      | [revs]      | -              |   |
| 16#0024     | Initial Incremental Data                    | [pulse]     | -              |   |
| 16#0040     | SERVOPACK Installation Environment Monitor  | [%]         | Un025          | % of allowable ambient temperature.               |
| 16#0041     | Servomotor Installation Environment Monitor | [%]         | Un026          | % of allowable ambient temperature <sup>1</sup> . |
| 16#0042     | Built-In Fan Remaining Life Ratio           | [%]         | Un027          | Percentage life remaining (9876=98.76%)           |

# TECHNICAL NOTE **YASKAWA**

| Pn825 Value | Prm1312                                       | Units     | Monitor Number | Notes                                   |
|-------------|---|-----------|----------------|---|
| 16#0043     | Capacitor Remaining Life Ratio                | [%]       | Un028          | Percentage life remaining (9876=98.76%) |
| 16#0044     | Surge Prevention Circuit Remaining Life Ratio | [%]       | Un029          | Percentage life remaining (9876=98.76%) |
| 16#0045     | Dynamic Brake Circuit Remaining Life Ratio    | [%]       | Un02A          | Percentage life remaining (9876=98.76%) |
| 16#0046     | Instantaneous Power                           | [W]       | Un032          |   |
| 16#0047     | Power Consumption                             | [.001 Wh] | Un033          | 12345 = 12.345 Wh                       |
| 16#0048     | Cumulative Power Consumption                  | [Wh]      | Un034          |   |

<sup>1</sup> SGM7J, SGM7A, SGM7P, SGM7G, and SGM7CV motors only. The display will show 0 for all other models.