
Instrument Overconfigured diagnostic alarm in MOD 30ML and Modcell

Problem Description:

The overconfigured diagnostic indicates that it is taking longer than the configured time to execute the database. This usually is not a problem, if it occurs occasionally. If the diagnostic is continuously active, the database should be revised to correct the error.

Applies to:

MOD 30ML and MODCELL Multiloop Processor

Solution:

There are nine scan intervals, 1 through 5 are for user configured functions, 6 is for the Interface Block itself, and 7 through 9 are for communication channels. Scan intervals 1 through 5 can be configured in increments of 50mS. Scan interval 6, which is fixed at 50mS, is for managing instrument states, diagnostics, events and I/O. Scan intervals 7 and 8 are for managing the communications ports one and two. Scan interval 9 is for communications port 3 on Modcell MultiLoop Processor. Scan interval 9 is for the display and built-in I/O on the MOD 30ML. Scan intervals 7 through 9 are fixed at 50mS for installed ports and set to zero for unused ports.

To accurately determine the scan times, the instrument must be configured, in the RUN state, and with valid I/O connected. Using the Application Builder status screen, issue the command CLR_MT to reset all MTIME values to zero. If these attributes are not zeroed after startup, they may represent a startup "surge" in some cases. After waiting a few minutes, or longer if required for supervisory messages or event-triggered operations to be executed, issue the command R XTIMES and record the MTIME values. From these readings, it can be determined to what degree the instrument is overconfigured. It is easiest to base the calculations on the shortest scan interval, which is 50mS.

Below is a sample calculation for an overconfigured instrument. The interval ratio is a factor used to normalize each scan group to a time slice of a 50mS unit.

| Scan Group | Scan Interval | MTIME | Interval Ratio | Time/50mS |
|--------------|---------------|-------|----------------|----------------|
| 1 | 300 | 314 | x 50/300 | = 52.3 |
| 2 | 350 | 324 | x 50/350 | = 46.3 |
| 3 | 400 | 295 | x 50/400 | = 36.9 |
| 4 | 450 | 310 | x 50/450 | = 34.4 |
| 5 | 500 | 404 | x 50/500 | = 40.4 |
| 6 | 50 | 24 | x 50/50 | = 24.0 |
| 7 | 50 | 13 | x 50/50 | = 13.0 |
| Total | | | | = 247.3 |

The calculations above show that the configuration is asking for over 247mS of processing to be done every 50mS. Notice that only group 1 is overconfigured, but even if its MTIME value was zero, the instrument would still be overconfigured.

To eliminate the overconfigured diagnostic, there are three directions that can be taken.

1. **Increase one or more of the group scan interval times**
2. **Optimize the configuration for more efficient operation**
3. **Remove some of the functions from the database**

The easiest solution would be to increase the scan interval times, assuming that acceptable updates could still be performed. The best solution may be to implement a combination of all three actions.