

Create an hourly heartbeat DO command that will trigger Command Log to deliver the event notification to Syslog server.

1. Use Calculation processor to create an Analog point that will increment once a second to be used in subsequent calculations.

- a. Create the Calculation #1 with “Result Type” to “Analog”, taking 2 inputs, EGU Min/Max to 0, 3600 respectively. (See “**Count Value**” in screen shot below)
- b. Create new Constant value, with value of 1.0. (See “**OnePointZero**” in screen shot below)
- c. Click “Save” button before proceeding to “Config” of Calc record #1.
- d. Click “Config” button for Calc #1 record to edit inputs.
- e. Set Input 1 “Type” to ANA, use “Map Analogs” button to map to “Internal Analogs” point “SECS”, click “Submit” button to save.
- f. Set Input 2 “Type” to CON type, use “Map Const” button to map to constant with value **1.0**, click “Submit” button to save. (See “**OnePointZero**” in screen shot below)
- g. Set “Function” operator to “+”. (Addition)
- h. Click “Submit” button to save.

2. Use Calculation Processor application to create a Modulo 3600 value that will reset every 3600 seconds (modulo 3600).

- a. Create the Calculation #2 with “Result Type” to “Analog”, taking 2 inputs, EGU Min/Max to 0, 3600 respectively. (See “**Modulus3600**” in screen shot below)
- b. Create new Constant value, with value of 3600.0. (See “**ThreeSixZeroZero**” in screen shot below)
- c. Click “Save” button before proceeding to “Config” of Calc record #2.
- d. Click “Config” button for Calc #2 record to edit inputs.
- e. Set Input 1 “Type” to ANA, use “Map Analogs” button to map to “Calculation” point “**Count Value**”, click “Submit” button to save.
- f. Set Input 2 “Type” to CON type, use “Map Const” button to map to constant with value **3600.0**, click “Submit” button to save. (Named “**ThreeSixZeroZero**” in screen shot below)
- g. Set “Function” operator to addition “REM”. (Modulus)
- h. Click “Submit” button to save.

3. Use Calculation Processor application to create a binary input point value that will change state once every 3600 seconds (once per hour).

- a. Create the Calculation #3 with “Result Type” to “Binary”, taking 2 inputs, EGU Min/Max do not matter, but can set to match previous of 0, 3600 respectively. (See “**HourlyHeartBeat**” in screen shot below)
- b. Click “Save” button before proceeding to “Config” of Calc record #3.
- c. Click “Config” button for Calc #3 record to edit inputs.
- d. Set Input 1 “Type” to ANA, use “Map Analogs” button to map to “Calculation” point “**Modulus3600**”, click “Submit” button to save.
- e. Set Input 2 “Type” to CON type, use “Map Const” button to map to constant with value 1.0, click “Submit” button to save. (Named “**OnePointZero**” in screen shot below)
- f. Set “Function” operator to “>”. (Greater Than)
- g. Click “Submit” button to save.
- h. Click “Submit” button at Calculation Configuration page to save all Calculations.

4. Use Data Transfer application to create 1 new “DO to DI” point.

- a. In “Number” field for “DO to DI” Type, enter 1 (or increment by 1 if existing types exist).
- b. Click “DO-DI” button to set name to new DO-DI point to “Hourly Heartbeat BO”, set “With Timeout” to “No”, set “Rate” to 1.
- c. Click “Submit” button to save.

5. Use Data Transfer application to create 1 new “DI to DO” point.

- a. In “Number” field for “DI to DO” Type, enter 1 (or increment by 1 if existing types exist).
- b. Click the “DI” button for “DI to DO” type, map to CALCULATIONS point “HourlyHearBeat”, set “Rate” to 1. Click “Submit” button to save.
- c. Click the “DO” button for “DI to DO” type, map to “Data Transfer (DO-DI)” point “Hourly Heartbeat BO” created in Step 4. Click “Submit” button to save.

6. Reboot RTU.

Note: this procedure presumes “Enable Command Log” is set to “Yes”, “Send to Syslog Server” is set to “Yes”, the Syslog server IP and UDP port are correctly configured, “Log SBO’s” and “Log Digital Outputs” are set to “Yes”.

The Calculation Processor application will calculate the modulo 3600 value incrementing it once per second. When the counter value is 3600 or 0, the modulus value will be zero – driving the binary input state to 0. All other counter values will force the modulus values to be nonzero, driving the binary input point state to 1.

The Data Transfer application will examine the state of the Calculation Processor’s binary input point and drive the DO side of a “DO-DI” point to match the same state as the Calculation Processor’s binary input.

The result is that every 3600 seconds, the DO point will be sent two state change commands (toggled), which the Command Log will capture and send to the Syslog server.

Below are configuration screen shots of configuration pages used:

Calculation Configuration

Calc #	Result Name	Result Type	EGU Min	EGU Max	Inputs	Config	Copy To
1	Count Value	Analog	0	3600	2	Config	Copy
2	Modulus3600	Analog	0	3600	2	Config	Copy
3	HourlyHeartBeat	Binary	0	3600	2	Config	Copy

Number of Calculation - 3 +

Constant #	Constant Name	Value
1	PI	3.14159265359
2	SQRT2	1.4142135624
3	SQRT3	1.732050808
4	ThreeSixZeroZero	3600.0
5	OnePointZero	1.0

Number of Constants - 5 +

Scan Interval 1 (Sec.)

Save Cancel Submit

Figure 1. Calculation Processor records and Constant definitions required.

Calculation Definition

Calc # 1 Result Name: Count Value

Input #	Function	Type
1		ANA ▼
2	+ ▼	CON ▼

Figure 2. "Count Value" record logic configuration.

Calculations Analog Input Point Mapping

Calculation # 1 Result Name: Count Value

Point	Device Name	Point Name	Source Points
1	CALCULATIONS	Count Value	Search... SPARE SelectAll points Count Value Modulus3600

Figure 3. Mapping "Count Value" point to Input #1 of "Count Value" Calc record. Internal

Calculations Constants Mapping

Calculation # 1 Result Name: Count Value

Point	Device Name	Constant Name	Source Points
2	CALCULATIONS	OnePointZero	Search... SPARE SelectAll points PI SQRT2 SQRT3 ThreeSixZeroZero OnePointZero

Figure 4. Mapping constant "OnePointZero" to Input #2 of "Count Value" Calc record.

Calculation Definition

Calc # 2 Result Name: Modulus3600

Input #	Function	Type
1		ANA ▼
2	REM ▼	CON ▼

Figure 5. Modulus3600 record logic configuration.

Calculations Analog Input Point Mapping

Calculation # 2 Result Name: Modulus3600

Point	Device Name	Point Name	Source Points
1	CALCULATIONS	Count Value	CALCULATIONS ▼ Search... SPARE Select All points Count Value Modulus3600

Figure 6. Mapping "Count Value" point to Input #1 of "Modulus3600" Calc record.

Calculations Constants Mapping

Calculation # 2 Result Name: Modulus3600

Point	Device Name	Constant Name	Source Points
2	CALCULATIONS	ThreeSixZeroZero	CALCULATIONS ▼ Search... SPARE Select All points PI SQRT2 SQRT3 ThreeSixZeroZero OnePointZero

Figure 7. Mapping constant "ThreeSixZeroZero" to Input #2 of "Modulus3600" Calc record.

Data Transfer

Type	Number	Config
AO to AI	0	AO-AI
DO to DI	1	DO-DI
AO to Float	0	AO-FLT
AO to ACC	0	AO-ACC
AI to ACC	0	AI-ACC
AI to AO	0	AI AO
DI to DO	1	DI DO
AI32 to ACC	0	AI32-ACC
DI to AI	0	DI-AI

Figure 8. Data Transfer points required.

Digital Output to Digital Input Configuration

Point	Name	With Timeout	Timer Unit	Timeout	Rate
0	Hourly Heartbeat BO	☒ No ☐ Yes	hours	0	1

Figure 9. "DO to DI" Data Transfer point configuration. Internal

DI to DO Transfer - Digital Input Point Mapping

Point	Device Name	Point Name	Rate	Source Points
0	CALCULATIONS	HourlyHeartBeat	1	CALCULATIONS Search... SPARE Select All points HourlyHeartBeat

Figure 10. Data Transfer "DI to DO" configuration for "DI" part.

DI to DO Transfer - Digital Output Point Mapping

Point	Device Name	Point Name	Source Points
0	Data Transfer (DO-DI)	Hourly Heartbeat BO	Data Transfer (DO-DI) Search... SPARE Select All points Hourly Heartbeat BO

Figure 11. Data Transfer "DI to DO" configuration for "DO" part.