



Quick Start Guide: How to use the ICP100 Arithmetic Function, min()

Purpose: This function is used to store the minimum value for any given variable. It maintains this value until it is reset using another variable (i.e. set point, digital input).

Procedure:

1. Open any module in ICP 100. We are using an A104 in this example, which is connected to a Type E thermocouple.

Info	Variable Settings	Module Settings							
Type	Variable Name	Sensor	Type of	Connection	Terminals	Format/Adjustment	Range/Error	Additional	DP Real Cfg.
V1	AI	TC1	TC Type E	Cold Junc. comp.	Connector 1	f.f.f [°C]	-100.0 1,000.0	No Filter	93h

2. Create an arithmetic variable.

Info	Variable Settings	Module Settings	
Type	Variable Name	Sensor	
V1	AI	TC1	TC Type E
V2			
V3			
V4			
V5			
V6			
V7			
V8			

3. We will name the arithmetic variable, MIN TC 1.

Info	Variable Settings	Module Settings							
Type	Variable Name	Sensor	Type of	Connection	Terminals	Format/Adjustment	Range/Error	Additional	DP Real Cfg.
V1	AI	TC1	TC Type E	Cold Junc. comp.	Connector 1	f.f.f.f.f [°C]	-100.000 1,000.000	No Filter	93h
V2	AR	MIN TC 1			3 (AI1+) 4 (AI1-)	f.f.f.f.f [°C]		Formula	B3h

4. Create a set point variable on the same module.

Info	Variable Settings	Module Settings	
Type	Variable Name	Sensor	
V1	AI	TC1	TC Type E
V2	AR	MIN TC 1	
V3			
V4			
V5			
V6			
V7			
V8			
V9			



5. Rename the variable to RESET MIN TC 1. The source of the set point should be itself. The data direction of the variable should be input/output.

192.168.1.28 / 1 / 2										
Infos		Variable Settings			Module Settings					
	Type	Variable Name	Sensor	Type of	Connection	Terminals	Format/Adjustment	Range/Error	Additional	DP Real Cfg.
V1	AI	TC1	TC Type E	Cold Junc. comp.		Connector 1 3 (AI1+) 4 (AI1-)	f,fff,fff [°C]	-100.000 1,000.000	No Filter	93h
V2	AR	MIN TC 1					f,fff,fff [°C]		Formula	B3h
V3	SP	RESET MIN TC 1					f,fff,fff	Independent	Host Source = Internal: V3	B3h

6. Double click on the cell called Formula under the Additional column of the MIN TC 1 channel. The formula edit window will appear.

Formula for variable V2: <MIN TC 1>

V2:= min(V1)

V1-10

V1: TC 1 V2: MIN TC 1

V3: RESET MAX TC 1

min max intef spec1 spec2 spec3 spec4

const

OK Cancel Help

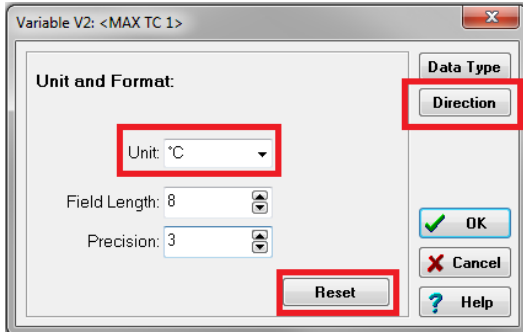
7. Click on the min(button.
Click on the variable what you would like to monitor.
Close the parentheses so the formula looks like this: min(V1)
Click OK.

8. Click on the cell under the Format/Adjustment column.

192.168.1.28 / 1 / 2										
Infos		Variable Settings			Module Settings					
	Type	Variable Name	Sensor	Type of	Connection	Terminals	Format/Adjustment	Range/Error	Additional	DP Real Cfg.
V1	AI	TC1	TC Type E	Cold Junc. comp.		Connector 1 3 (AI1+) 4 (AI1-)	f,fff,fff [°C]	-100.000 1,000.000	No Filter	93h
V2	AR	MIN TC 1					f,fff,fff [°C]		min(V1)	B3h
V3	SP	RESET MIN TC 1					f,fff,fff	Independent	Host Source = Internal: V3	B3h



- Set the unit for the variable.
Change data direction to 0.
Click on the Reset button.

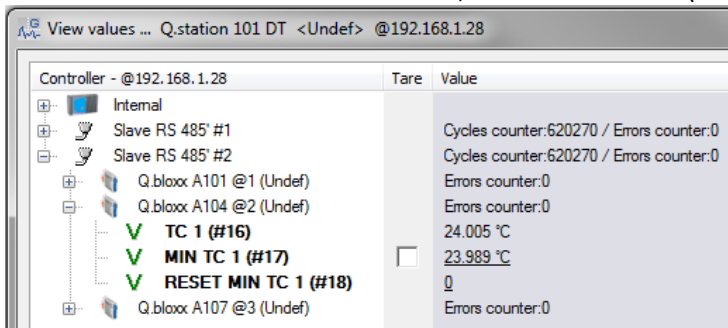


- The reset button will bring up the following menu:
We will reset the variable via Host.
It will be reset when the variable chosen is activated (Save to nonvolatile).
Click OK to apply changes.



- Save the configuration to the A104.
- Update the project to the controller.
- After the update is finished, read online values from controller.
TC 1: Type E thermocouple channel
MIN TC 1: Records the minimum value of TC 1
RESET MIN TC 1: Used to reset the value of the MIN TC 1.

- When RESET MIN TC 1 = 1, reset activated
- When RESET MIN TC 1 = 0, reset deactivated (storing min value)





14. When RESET MIN TC 1 = 1, the minimum value will always equal the TC 1 value.

Controller - @192.168.1.28		Tare	Value
Internal			
Slave RS 485' #1			Cycles counter:844980 / Errors counter:0
Slave RS 485' #2			Cycles counter:844980 / Errors counter:0
Q.bloxx A101 @1 (Undef)			Errors counter:0
Q.bloxx A104 @2 (Undef)			Errors counter:0
<input checked="" type="checkbox"/> TC 1 (#16)			24.238 °C
<input checked="" type="checkbox"/> MIN TC 1 (#17)	<input type="checkbox"/>		24.238 °C
<input checked="" type="checkbox"/> RESET MIN TC 1 (#18)			1
Q.bloxx A107 @3 (Undef)			Errors counter:0

15. When RESET MIN TC 1 = 0, the variable that is being monitored will have its minimum value saved.

Controller - @192.168.1.28		Tare	Value
Internal			
Slave RS 485' #1			Cycles counter:1573910 / Errors counter:0
Slave RS 485' #2			Cycles counter:1573910 / Errors counter:0
Q.bloxx A101 @1 (Undef)			Errors counter:0
Q.bloxx A104 @2 (Undef)			Errors counter:0
<input checked="" type="checkbox"/> TC 1 (#16)			26.151 °C
<input checked="" type="checkbox"/> MIN TC 1 (#17)	<input type="checkbox"/>		23.860 °C
<input type="checkbox"/> RESET MIN TC 1 (#18)			0
Q.bloxx A107 @3 (Undef)			Errors counter:0

Contact us today if you have any further questions!