How to use ISaGRAF New Retain Variable? What is its advantage?

The I-8417/8817/8437/8837 & I-7188EG/XG, Wincon-8x37/8x36 & Wincon-8x47/8x46 supports new retain function since below driver version.

I-7188EG + X607 or X608: driver ver. 2.05 or later (better to be 2.17 or later)
I-7188XG + X607 or X608: driver ver. 2.04 or later (better to be 2.15 or later)
I-8xx7+ S256 or S512: driver ver. 3.07 or later (better to be 3.19 or later)

W-83x7/83x6+ S256 or S512: driver ver. 3.18 or later (better to be 3.36 or later) with new back-plane of WB-831 (For 3-slot): Rev 2.6 (delivered since 2006)
W-87x7/87x6+ S256 or S512: driver ver. 3.18 or later (better to be 3.36 or later) with new back-plane of WB-871 (For 7-slot): Rev 2.8 (delivered since 2006)

If battery backup SRAM is found in the backplane of the controller (I-8xx7: S256/S512, I-7188EG/XG: X607/X608, Wincon-83x7/87x7/83x6/87x6: S256/S512), the maximum number of retained variables for new retain function are listed as below. New retain variable is supported by below ISaGRAF "C-function"

Target 1: I-7188EG/XG+X607/608, I-8417/8817/8437/8837+S256/512
Target 2: Wincon+S256/512 with new Wincon back-plane

Retain_B: retain Boolean variable. Target 1: max. 256 variables, Target 2: max. 1024.
Retain_N: retain Integer variable. Target 1: max. 1024 variables, Target 2: max. 4096.
Retain_F: retain Real variable. Target 1: max. 1024 variables, Target 2: max. 4096.
Retain_T: retain Timer variable. Target 1: max. 256 variables, Target 2: max. 1024.
Retain_X: retain variable by using its Network address

Advantage of new Retained functions:

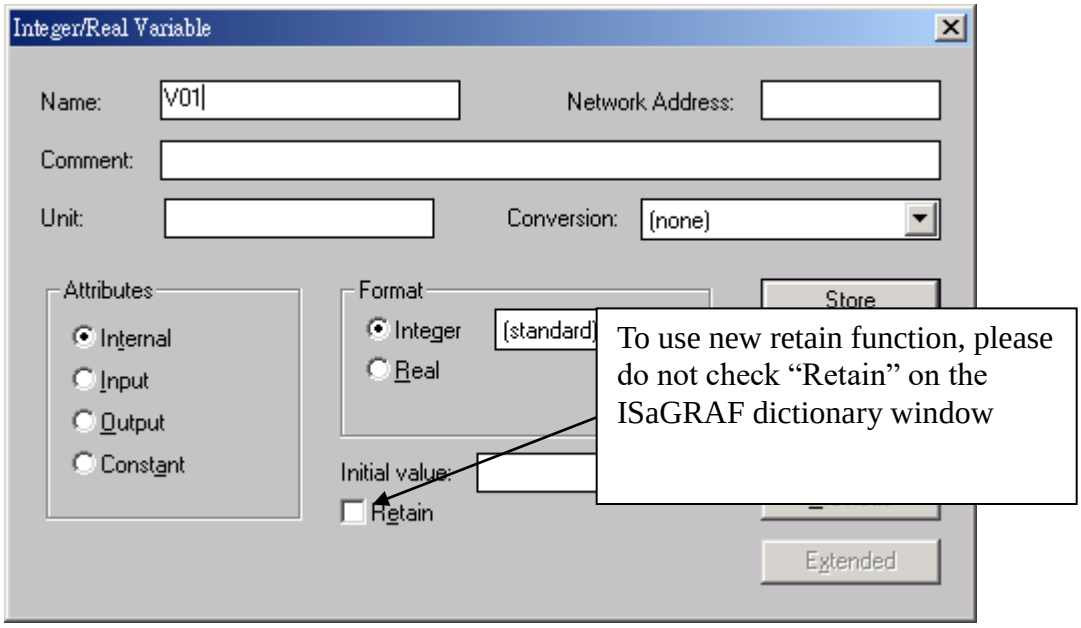
1. The retain value by new retain function will keep alive always whatever controller's power is off, or modifying, re-compiling & download a new ISaGRAF project. Except the battery running out of its energy. (Old retained function will clear as 0 when "re-compiling & download a new ISaGRAF project ").

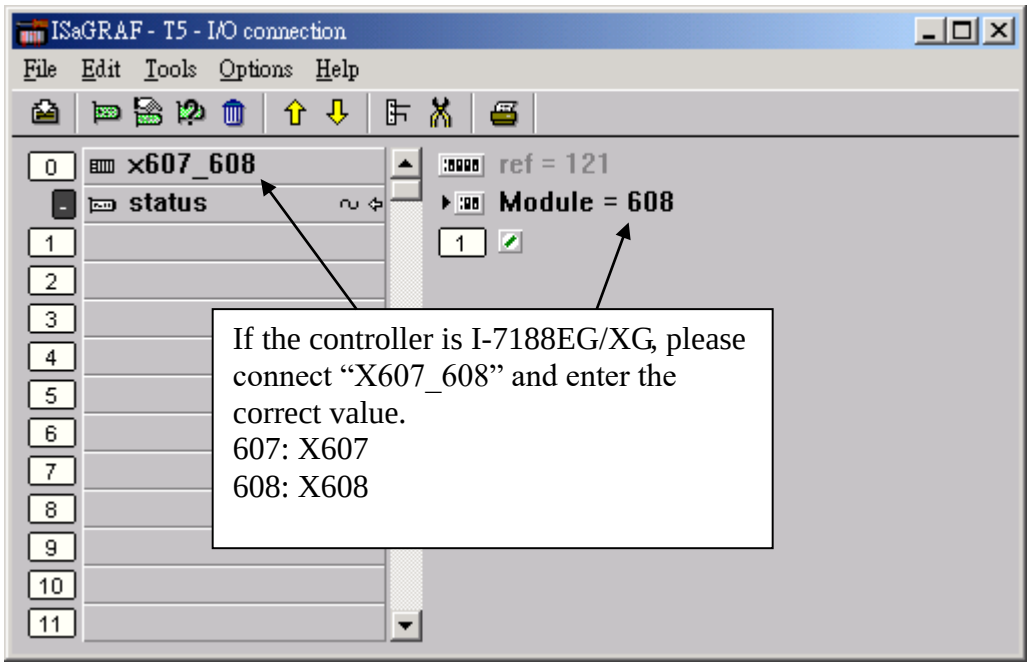
2. Number of retained variables is much more than old method.

Please refer to below two ST examples to use new retain function.

Important:
To use new retain function, please **do not** check "Retain" on the ISaGRAF dictionary window. And if your controller is **I-7188EG/XG**, please connect IO complex equipment "**X607_608**" in the IO connection windows.

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Sample program:

```
(* These Retain_? Functions should be called only once in the first PLC scan cycle as below code *)

(* To_Retain is declared as an internal Boolean variable with initial value as TRUE *)
(* Tmp is declared as an internal Boolean variable *)

(*
  Check1 is declared as internal Integer variable, do not check "Retain" in it in the dictionary windows.
  This “Check1” variable is for identification if the initial value of the retained variables were well set or not.
   For example, we can define if “Check1” value is 1357246, it means all initial value of retained variables are
   well set. Then the control program can go. However if “Check1” is not 1357246, it means some initial value
   of retained variables haven’t been set. Then the control program CAN NOT go. Because it will generate
   error (some retained value are not set yet) .
  So user has to set necessary initial value of the retained variables once at least. Then set “Check1” as
  1357246.
*)

(* B1 , B2 is declared as internal Boolean variable, Do not check "Retain" *)
(* N1 , N2 is declared as internal Integer variable, Do not check "Retain" *)
(* F1 , F2 is declared as internal Real variable, Do not check "Retain" *)
(* T1 , T2 is declared as internal Timer variable, Do not check "Retain" *)

(* To set retained variables when controller is start running *)

 if To_Retain then

      To_Retain := False ;    (* Only do it once *)

      Tmp := Retain_N( Check1 , 1) ;    (* for identification *)

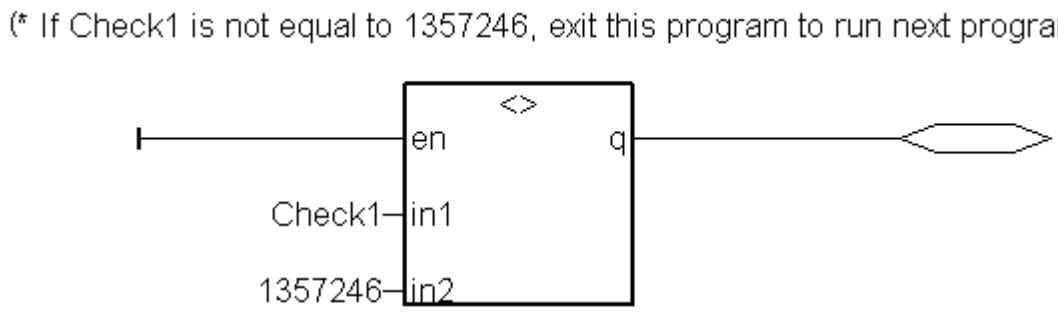
      Tmp := Retain_B( B1 , 1) ;          Tmp := Retain_B( B2 , 2) ;      (* Boolean *)
      Tmp := Retain_N( N1 , 11) ;         Tmp := Retain_N( N2 , 12) ;     (* Integer *)
      Tmp := Retain_F( F1 , 1) ;          Tmp := Retain_F( F2 , 2) ;      (* Real *)
      Tmp := Retain_T( T1 , 1) ;          Tmp := Retain_T( T2 , 2) ;      (* Timer *)

 end_if ;

 (* After then Check1, B1, B2, N1, N2, F1, F2, T1, T2 will be automatically retained in the program *)
```


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Then after in the following Ladder programs, user may add below statement to check the " Check1" value.



■ ■ ■

Then after in the following ST programs, user may add below statement to check the " Check1" value.

```
(* If Check1 is not equal to 1357246, exit this program to run next program *)

if   Check1 <>   1357246   then
     return ;
end_if ;

 ...
```


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