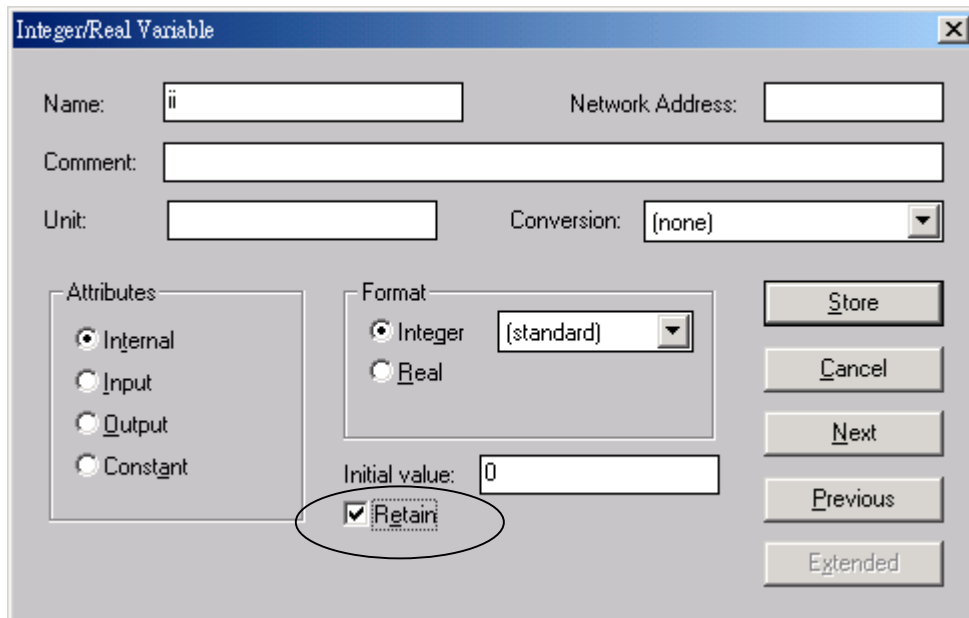


**FAQ-026:** New ISaGRAF retained variable is better than old one.

- I-7188EG + X607 or X608: driver ver. 2.05 or later
- I-7188XG + X607 or X608: driver ver. 2.04 or later
- I-8xx7+ S256 or S512 : driver ver. 3.07 or later
- W-8x37+ S256 or S512 : driver ver. 3.17 or later with new Wincon backplane
  - WB-831 (For 3-slot ): Rev 2.6
  - WB-871 (For 7-slot ): Rev 2.8

The old method to use retain variable is to check “Retain” in the ISaGRAF dictionary as below. The retain value keep when power is off. However it has a big disadvantage. The retained value will be lost when download a modified project to the controller.



New retain variable is supported by below functions.

Target 1 : I-7188EG/XG+X607/608, I-8417/8817/8437/8837+S256/512

Target 2 : W-8037/8337/8737+S256/512 with new Wincon backplane

Retain\_B : retain Boolean variable. Target 1: up to 256 variables, Target 2: up to 1024.

Retain\_N : retain Integer variable. Target 1: up to 1024 variables, Target 2: up to 4096.

Retain\_F : retain Real variable. Target 1: up to 1024 variables, Target 2: up to 4096.

Retain\_T : retain Timer variable. Target 1: up to 256 variables, Target 2: up to 1024.

Retain\_X : retain variable by using its Network address

The retain value will keep always whatever power is off, or modifying , re-compiling & download a new ISaGRAF project.

```

Example1:  (* Set by variable name *)
(* To_Retain is declared as an internal boolean variable with initial value as TRUE *)
(* Tmp is declared as an internal boolean variable *)
(* 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" *)
(* is_fault & fault_type are declared as internal integer *)

(* PC / HMI can request controller fault state & type by Modbus protocol at No.=9999 & 9998 *)

(* to get controller state *)
is_fault := R_MB_ADR(1,9999);      (* 0: Ok , 1: controller fault happens *)

(* controller fault type
101 : Global fault : project stop running, only HMI/PC can request it by Modbus No. 9999 & 9998
--- other value is Local fault ---
102: S_R_R error, invalid REAL value
103: R_MB_REL error, invalid REAL value
104: INT_REAL error, invalid REAL value
105: RETAIN_F error, invalid REAL value
106: RETAIN_X error, invalid REAL value
107: Real value divided by 0
108: Integer value divided by 0
109: F_READ_F error, invalid REAL value (For Wincon-8x37/8x36 only)
110: I-87K IO board in slot 0 to 7 not found.
*)
fault_type := R_MB_ADR(1,9998);

(* Do action here when "Local Fault" happens *)
if is_fault=1 then

    (* Do action here when "Local Fault" happens *)
    (* ... *)

    (* Only for Wincon-8x37: Stop program running & reset all output in slot 0 to 7 *)
    (* tmp := Stop_APL( ); *)

```

(\* To clear the value in Network address 9999 & 9998 when Local fault happens \*)

tmp := W\_MB\_ADR(1, 9999, 0);

tmp := W\_MB\_ADR(1, 9998, 0);

end\_if;

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

if To\_Retain then

To\_Retain := False ; (\* Only do it once \*)

Tmp := Retain\_B( B1 , 1 ) ;

Tmp := Retain\_B( B2 , 2 ) ;

Tmp := Retain\_N( N1 , 1 ) ;

Tmp := Retain\_N( N2 , 2 ) ;

Tmp := Retain\_F( F1 , 1 ) ;

Tmp := Retain\_F( F2 , 2 ) ;

Tmp := Retain\_T( T1 , 1 ) ;

Tmp := Retain\_T( T2 , 2 ) ;

end\_if ;

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

Example2: (\* Set by variable's network address No. \*)

(\* To\_Retain is declared as an internal boolean variable **with initial value as TRUE** \*)

(\* Tmp is declared as internal boolean variable \*)

(\* ii is declared as an internal integer \*)

(\* N01 ~ N10 is declared as internal Integer variable with network address No. = 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, Do not check "Retain" \*)

(\* F01 ~ F10 is declared as internal Real variable with network address No. = 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, Do not check "Retain" \*)

(\* is\_fault & fault\_type are declared as internal integer \*)

(\* PC / HMI can request controller fault state & type by Modbus protocol at No.=9999 & 9998 \*)

(\* to get controller state \*)

is\_fault : R\_MB\_ADR(1,9999); (\* 0: Ok , 1: controller fault happens \*)

(\* controller fault type

101 : Global fault : project stop running, only HMI/PC can request it by Modbus No. 9999 & 9998

--- other value is Local fault ---

102: S\_R\_R error, invalid REAL value

103: R\_MB\_REL error, invalid REAL value

104: INT\_REAL error, invalid REAL value

105: RETAIN\_F error, invalid REAL value

106: RETAIN\_X error, invalid REAL value

107: Real value divided by 0

108: Integer value divided by 0

109: F\_READ\_F error, invalid REAL value (For Wincon-8x37/8x36 only)

110: I-87K IO board in slot 0 to 7 not found.

\*)

fault\_type := R\_MB\_ADR(1,9998);

(\* Do action here when "Local Fault" happens \*)

if is\_fault=1 then

    (\* Do action here when "Local Fault" happens \*)

    (\* ... \*)

    (\* **Only for Wincon-8x37:** Stop program running & reset all output in slot 0 to 7 \*)

    (\* tmp := Stop\_APL( ); \*)

    (\* To clear the value in Network address 9999 & 9998 when Local fault happens \*)

    tmp := W\_MB\_ADR(1, 9999, 0);

    tmp := W\_MB\_ADR(1, 9998, 0);

end\_if;

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

if To\_Retain then

    To\_Retain := False ; (\* Only do it once \*)

    for ii := 1 to 10 do

        Tmp := Retain\_X('N', 2\*ii-1 , ii ); (\* retained N01 to N10 \*)

        Tmp := Retain\_X('F', 2\*ii+19 , ii ); (\* retained F01 to F10 \*)

    end\_for ;

end\_if ;

(\* After then N01 to N10 & F01 to F10 will be automatically retained in the program \*)