

Nexto Xpress and G series, How to set parameters for I/O-modules

1. Parameter Area in GN-9289

2. Example of parameter address area for GN-9289

3. BCS Tools config of request and mapping to variables

- Example, XP325, GN-9289 with GT-3704 in slot 1 and 2, GT-3114 in slot 3

4. The parameter are sent to GN-9289

- The first time the PLC go to RUN and after every event where initialization occurs according to the table below.

5. Main Program

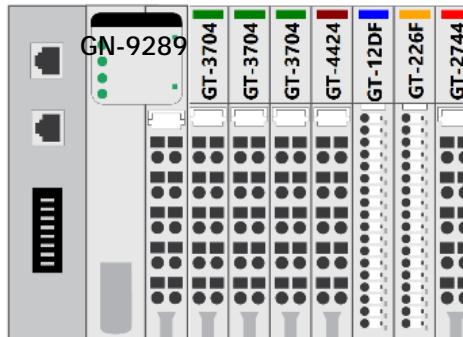
- Init program (generated by BCS Tools)

6. PLC code for Parameter Set

- Once the parameters has been sent the cyclic data exchange starts

7. Slave configuration, GN-9289

8. Variable list



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1. Parameter Area in GN-9289

The network adapter GN-9289 has an internal memory where each slot has a dedicated register area of 32 registers.

Slot 1 starts at 0x2000

Slot 2 0x2020, Slot 3 0x2040...

Slot#1	0x2000(8192)~0x201F(8223)	Slot#17	0x2200(8704)~0x221F(8735)
Slot#2	0x2020(8224)~0x203F(8255)	Slot#18	0x2220(8736)~0x223F(8767)
Slot#3	0x2040(8256)~0x205F(8287)	Slot#19	0x2240(8768)~0x225F(8799)
Slot#4	0x2060(8288)~0x207F(8319)	Slot#20	0x2260(8800)~0x227F(8831)
Slot#5	0x2080(8320)~0x209F(8351)	Slot#21	0x2280(8832)~0x229F(8863)
Slot#6	0x20A0(8352)~0x20BF(8383)	Slot#22	0x22A0(8864)~0x22BF(8895)
Slot#7	0x20C0(8384)~0x20DF(8415)	Slot#23	0x22C0(8896)~0x22DF(8927)
Slot#8	0x20E0(8416)~0x20FF(8447)	Slot#24	0x22E0(8928)~0x22FF(8959)
Slot#9	0x2100(8448)~0x211F(8479)	Slot#25	0x2300(8960)~0x231F(8991)
Slot#10	0x2120(8480)~0x213F(8511)	Slot#26	0x2320(8992)~0x233F(9023)
Slot#11	0x2140(8512)~0x215F(8543)	Slot#27	0x2340(9024)~0x235F(9055)
Slot#12	0x2160(8544)~0x217F(8575)	Slot#29	0x2360(9056)~0x237F(9087)
Slot#13	0x2180(8576)~0x219F(8607)	Slot#20	0x2380(9088)~0x239F(9119)
Slot#14	0x21A0(8608)~0x21BF(8639)	Slot#30	0x23A0(9120)~0x23BF(9151)
Slot#15	0x21C0(8640)~0x21DF(8671)	Slot#31	0x23C0(9152)~0x23DF(9183)
Slot#16	0x21E0(8672)~0x21FF(8703)	Slot#32	0x23E0(9184)~0x23FF(9215)

.....

.....

Slot#63 0x27C0(10176)~0x27DF(10207)

Note!

0x2000: 0x => hexa decimal value

(8192): decimal value

Note!

Parameters must be transferred from the master to respective I/O module at startup.

Each I/O module saves its own parameters.

Table below shows the meaning of each register

Address Offset	Access	Type, Size	Description
+ 0x02(+2) **	Read	1word	Input start register address of input image word this slot.
+ 0x03(+3) **	Read	1word	Input word's bit offset of input image word this slot.
+ 0x04(+4) **	Read	1word	Output start register address of output image word this slot.
+ 0x05(+5) **	Read	1word	Output word's bit offset of output image word this slot.
+ 0x06(+6) **	Read	1word	Input bit start address of input image bit this slot.
+ 0x07(+7) **	Read	1word	Output bit start address of output image bit this slot.
+ 0x08(+8) **	Read	1word	Size of input bit this slot
+ 0x09(+9) **	Read	1word	Size of output bit this slot
+ 0x0A(+10)**	Read	n word	Read input data this slot
+ 0x0B(+11)**	Read/Write	n word	Read/write output data this slot
+ 0x0E(+14)	Read	1word	GT-number, if GT-1238, returns 0x1238
+ 0x0F(+15)	Read	String upto 72byte	First 1word is length of valid character string. If GT-1238, returns "00 1E 52 54 2D 31 32 33 38 2C 20 38 44 49 2C 20 32 34 56 64 63 2C 20 55 62 69 76 65 72 73 61 6C 00 00" Valid character size = 0x001E =30 characters, "GT-1238, 8DI, 24Vdc, Universal"
+ 0x10(+16)	Read	1word	Size of configuration parameter byte
+ 0x11(+17)**	Read/Write	n word	Read/write Configuration parameter data
+ 0x17(+23)	Read	2word	Firmware Revision ex) 0x00010010 (Major revision 1 /Minor revision 1, Rev 1.001)
+ 0x19(+25)	Read	2word	Firmware release date.

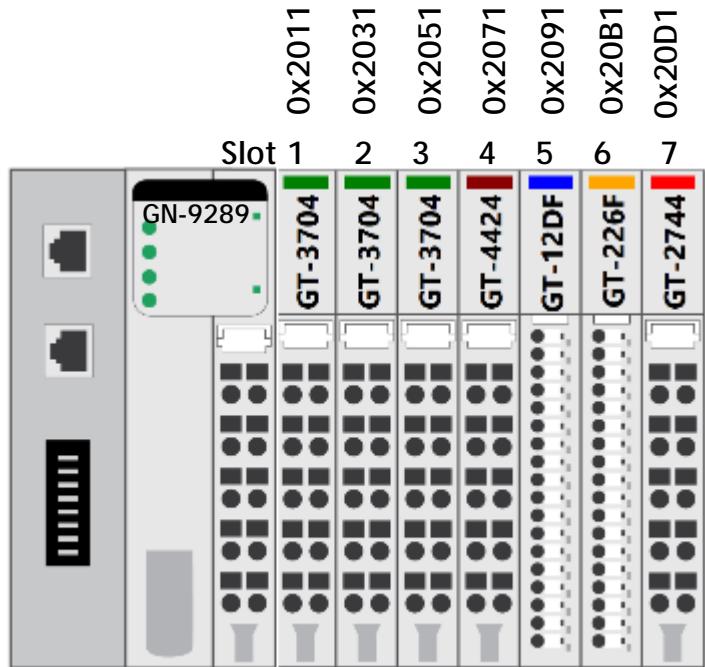
Access the parameter data located at an offset of 0x11.

$$\Rightarrow 0x2000 + 0x11 = 0x2011$$

Module placed in slot 1 (0x2000) + offset 0x11 => 0x2011

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2. Example of parameter address area for GN-9289

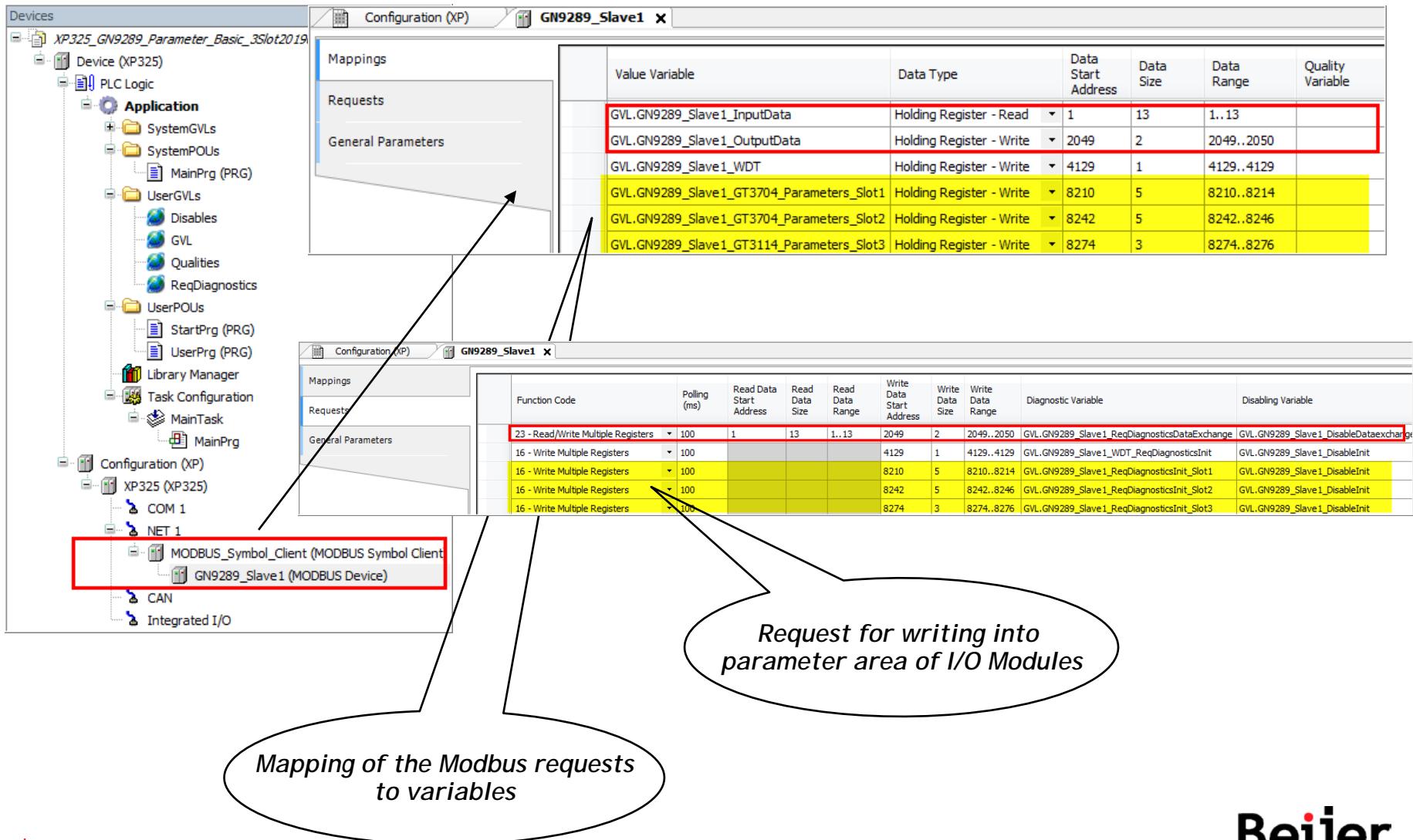


In case of Nexto and Nexto Xpress the defined address is in decimal format and the Modbus drivers are 1-based.
0x2011 => 8209(dec) + 1 => 8210 is the address to use.

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3. BCS Tools config of request and mapping to variables

- Example, XP325, GN-9289 with GT-3704 in slot 1 and 2, GT-3114 in slot 3



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4. The parameter are sent to GN-9289

- The first time the PLC go to RUN and after every event where initialization occurs according to the table below.

Synoptic table on the behaviour of remanent variables

x = Value gets maintained - = Value gets initialized

after Online command	VAR	VAR RETAIN	VAR PERSISTENT (very uncommon, see note below)	VAR RETAIN PERSISTENT VAR PERSISTENT RETAIN
Reset warm	-	x	x	x
Reset cold	-	-	x	x
Reset origin	-	-	-	-
Download	-	-	x	x
Online Change	x	x	x	x
Reboot	-	x	-	x

5. Main Program

- Init program (generated by BCS Tools)

The screenshot shows the Beijer BCS Tools interface. On the left, the 'Devices' tree view shows a project named 'XP325_GN9289_Parameter_Basic'. Under 'PLC Logic', there is an 'Application' folder containing 'SystemGVs', 'SystemPOUs', and 'MainPrg (PRG)'. The 'MainPrg (PRG)' node is highlighted with a red rectangle. On the right, the 'Configuration (XP)' tab is active, displaying the main program code:

```

(*Main POU associated with MainTask that calls StartPrg, UserPrg/ActivePrg and NonSkippedPrg. This POU is blocked to edit.*)
PROGRAM MainPrg
VAR
    isFirstCycle : BOOL := TRUE;
END_VAR

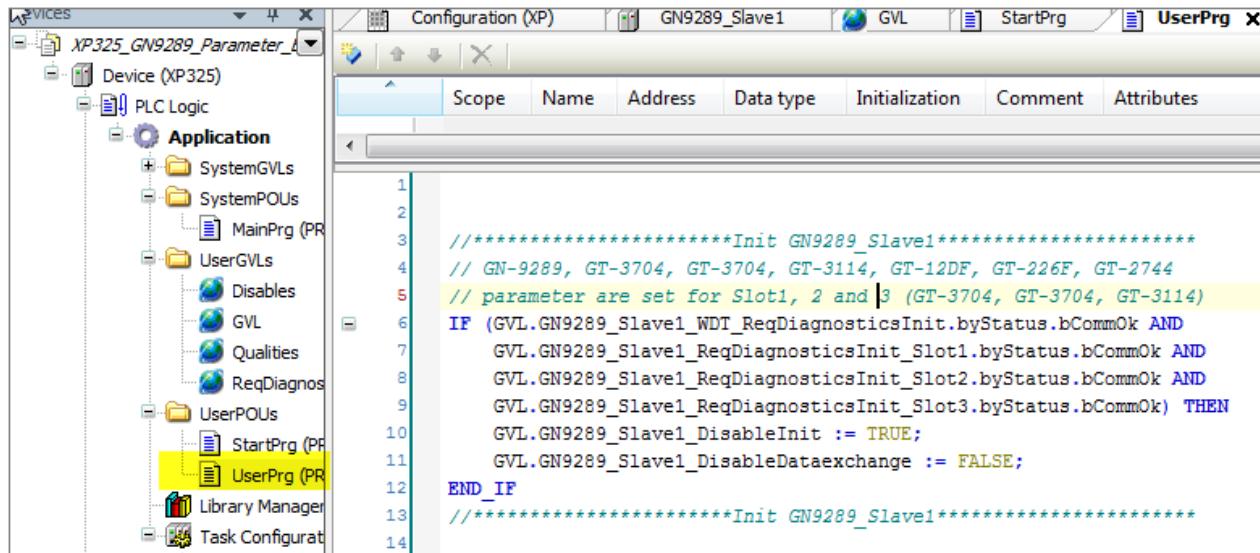
IF isFirstCycle THEN
    StartPrg();
    isFirstCycle := FALSE;
ELSE
    UserPrg();
END_IF;

```

Nexto Xpress and G series, How to set parameters for I/O-modules

6. PLC code for Parameter Set

- Once the parameters has been sent the cyclic data exchange starts



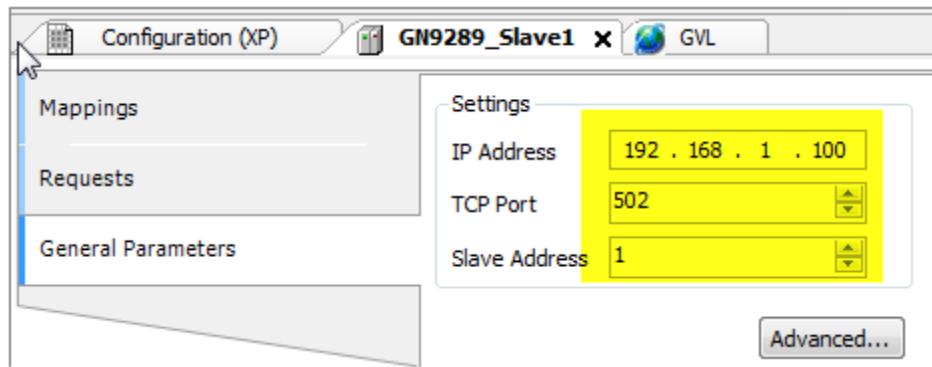
The screenshot shows the Beijer Configuration (XP) software interface. On the left, the project tree is visible under 'VICES' for the device 'XP325_GN9289_Parameter_Set'. The 'UserPrg (PR)' node is selected. The main window displays the PLC code:

```

1 //*****Init GN9289_Slave1*****
2
3 // GN-9289, GT-3704, GT-3704, GT-3114, GT-12DF, GT-226F, GT-2744
4 // parameter are set for Slot1, 2 and |3 (GT-3704, GT-3704, GT-3114)
5 IF (GVL.GN9289_Slave1_WDT_ReqDiagnosticsInit.byIdStatus.bCommOk AND
6     GVL.GN9289_Slave1_ReqDiagnosticsInit_Slot1.byIdStatus.bCommOk AND
7     GVL.GN9289_Slave1_ReqDiagnosticsInit_Slot2.byIdStatus.bCommOk AND
8     GVL.GN9289_Slave1_ReqDiagnosticsInit_Slot3.byIdStatus.bCommOk) THEN
9     GVL.GN9289_Slave1_DisableInit := TRUE;
10    GVL.GN9289_Slave1_DisableDataExchange := FALSE;
11 END_IF
12 //*****Init GN9289_Slave1*****
13
14

```

7. Slave configuration, GN-9289



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8. Variable list

(3-5) Parameters can be set this way

The screenshot shows the Beijer Electronics Configuration (XP) software interface. The main window displays a list of variables (variable list) with columns: Scope, Name, A.., Data type, Initialization, and Comment. Several variables are highlighted with red boxes and numbered 1 through 5.

Scope	Name	A..	Data type	Initialization	Comment
VAR_GLOBAL	GN9289_Slave1_DisableDataExchange		BOOL	TRUE	Init to TRUE to disable cyclic dataexchange before p
VAR_GLOBAL	GN9289_Slave1_DisableInit		BOOL		Init flag to control parameter message
VAR_GLOBAL	GN9289_Slave1_ReqDiagnosticsDataExchange		NXMODBUS_DIAGNOSTIC_STRUCTS.T_DIAG_MODBUS_ETH_MAPPING_1		Diagnostic structure for communication status
VAR_GLOBAL	GN9289_Slave1_WDT_ReqDiagnosticsInit		NXMODBUS_DIAGNOSTIC_STRUCTS.T_DIAG_MODBUS_ETH_MAPPING_1		Diagnostic structure for communication status
VAR_GLOBAL	GN9289_Slave1_ReqDiagnosticsInit_Slot1		NXMODBUS_DIAGNOSTIC_STRUCTS.T_DIAG_MODBUS_ETH_MAPPING_1		
VAR_GLOBAL	GN9289_Slave1_ReqDiagnosticsInit_Slot2		NXMODBUS_DIAGNOSTIC_STRUCTS.T_DIAG_MODBUS_ETH_MAPPING_1		
VAR_GLOBAL	GN9289_Slave1_ReqDiagnosticsInit_Slot3		NXMODBUS_DIAGNOSTIC_STRUCTS.T_DIAG_MODBUS_ETH_MAPPING_1		
VAR_GLOBAL	GN9289_Slave1_WDT		INT		
VAR_GLOBAL	GN9289_Slave1_GT3704_Parameters_Slot1		ARRAY[0..4] OF WORD	6#3, 4(0)	WDT *100ms (0=WDT disable, Default)
VAR_GLOBAL	GN9289_Slave1_GT3704_Parameters_Slot2		ARRAY[0..4] OF WORD	[16#3, 4(0)]	[0]SensorType_TemperatureType_DataResolution_F
VAR_GLOBAL	GN9289_Slave1_GT3114_Parameters_Slot3		ARRAY[0..2] OF WORD	[16#101, 2(0)]	[16#3, 4(0)] Current range 0=0-20 mA, 1=4-20mA
VAR_GLOBAL	GN9289_Slave1_InputData		ARRAY[0..12] OF INT		Input data from GN-9289
VAR_GLOBAL	GN9289_Slave1_OutputData		ARRAY[0..1] OF INT		Output data to GN-9289

A detailed view of the 'GN9289_Slave1_GT3704_Parameters_Slot1' row is shown in the 'Initialization Value' dialog box (numbered 4). The dialog lists the array elements with their initial values and data types:

Expression	Init value	Data type
GN9289_Slave1_GT3704_Parameters_Slot1[0]	16#3	WORD
GN9289_Slave1_GT3704_Parameters_Slot1[1]	0	WORD
GN9289_Slave1_GT3704_Parameters_Slot1[2]	0	WORD
GN9289_Slave1_GT3704_Parameters_Slot1[3]	0	WORD
GN9289_Slave1_GT3704_Parameters_Slot1[4]	0	WORD

Number 5 points to the 'OK' button in the dialog box.