

Win Win-GRAF - Test_01	
<u>File E</u> dit <u>V</u> iew Insert Project	<u>T</u> ools <u>W</u> indow <u>H</u> elp
🖆 🖬 🖹 🛃 X 🗈 🛱	노 🔨 🗁 🕐 연日 🟭 🎟 品 😘 🧟 🖪 🎽 🖉
Workspace	10 Drivers
⊡ 🗊 Test_01	Name Value Type
🚋 🚞 Exception programs	Global variables
🛱 🔤 Programs	II E RETAIN variables
🗗 Main	Main
🚊 📴 Watch (for debuggi	Contraction Contra
Soft Scope	🖬 pOnDivZero 🗸
🔤 Initial values	
🐜 🚻 Binding Configuration	B Name Value
🔤 😽 🚽 Global defines	(*)
🚰 Variables	
E Types	Build X
	Build Cross references Runtime Call stack Breakpoints Digital sampling trace Prompt
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2. Click the "Insert Configuration" button on the left of the "IO Drivers" window, then click the "MOSBUS Master" and "OK" to enable the Modbus Master setting.

10 Drivers					
展		Name Value	7	Name	Туре
<mark>眉、</mark> 品				🚮 G	ilobal variables 🛛 🔼
				🚽 R	ETAIN variables 📃
*	Add Configuration				\mathbf{X}
	Choose a configuration				ОКЪ
	(All)				
	MODBUS				Cancel
ġį.	MODBUS Mast	er 🥿			
	MODBUS Slave	•			

3. Click the "Insert Master/Port" button on the left side to open the setting window. Then, select the "Serial MODBUS-RTU", set COM Port (e.g., "COM2:9600,N,8,1") and Delay time (recommended value: 10 ms, it can be 0 to 10000), and then click "OK".

ers *						í X
M <mark>@</mark> MODBUS M	aster	Name Value		Name	Туре	
			-		obal variables	<u>^</u>
MODBUS Maste	Port			B RI	ETAIN variables	B
DICIDITUS DIUSIO	TION				ain DnBadIndex	
	Ethernet	ОК			DnDaumuex DnDivZero	
Address:	-	Cancel				
Port:	502		ar		Value	
	202			lic	Value	
Pr <u>o</u> tocol:	TCP - Open MODBUS UDP - MODBUS RTU					>
	UDP - Open MODBUS					
- L.					a Modbus A	
Consult Mont				-	ne setting to	
Oserial MODE		ASC		M2:960	0,N,8,1"	
<u>⊂</u> om. port:	COM2:9600,N,8,1					
Delay between	requests	Afte	[.] recei	ving th	e respond, w	aiting fo
Delay (ms):	10	10 m	s to s	end the	e next comma	nd
Delay (IIIs).	10					
Try to records	ect after communication er	ror				
and the second second second second second	ostic info for slaves	Sele			if you do not	want
		to us	e this	COM F	ort setting.	
	ot open and manage this p	Jordy				

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4. Click the "Insert Slave/Data Block" button on the left side to create a data block.

IO Drivers		
E Ma MODBUS Master	Name	Value
器 RTU: COM2:9600,N,8,1	Mode	RTU
	Address	COM2:9600,N,8,1
	Port	502
	Reconnect after error	Image: A start of the start
	Slaves diagnostics	Image: A start of the start
	Delay between requests (ms)	10
	Disabled	

This table lists five data blocks, and each data block stands for one Modbus Master Request.

Item	Function Code	Modbus Request	Description		
<u>1</u>	2	Read Input-bits	Read DI data		
<u>2</u>	5	Write single coil-bit	Write DO data		
<u>3</u>	4	Read Input Registers	Read AI data		
<u>4</u>	6	Write single holding register	Write one AO data (16-bit)		
<u>5</u>	16	Write Holding Registers	Write multiple AO data (16/32 bits)		

1.1.1. Read DI data

- 1. Completing all the following settings in the "MODBUS Master Request" window as the figure below, and then click "OK".
 - a. <u>Slave/Unit</u>: Enter the Net-ID of the Slave device. (In this case, the Net-ID is "1").
 - b. <u>MODBUS Request</u>: Select "<2> Read Input Bits" option.

c. <u>Base address</u> : <u>Nb items</u> :	Start from "1" by default. The number of DI signals to read.(In this case, the number is "16").
d. Activation: <u>Periodic</u> :	The way to send the Modbus request. Sending the request periodically. (In this case, to send once every two seconds.) "on error" means the next sending time when an exception occurred (e.g., 15 seconds).
On call: On change:	The request is activated when a program call to send it. In case of a write request, means that the request is activated each time any variable changed.
e. <u>Timeout</u> :	Set a timeout value. (When time-out occurred, it will show the defined error code.) The recommended value for the Modbus RTU/ASCII device is 200 to 1000 ms. E.g., 250 ms.
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	5						
	-						
MODBUS Maste	er Request						
Request	T		ОК				
Description:				\mathbf{X}			
<u>S</u> lave/Unit:	1 (a		Cancel				
	· · · · · · · · · · · · · · · · · · ·			<u>Note:</u>			
MODBUS Requ			\frown	lf you wa	int to change	the "Base a	address",
<1> Read C <2> Read In			1b	right-clic	k the "MODB	BUS Master'	' and then
<3> Read H	olding Registers	V		select the	e "MODBUS I	Master Add	resses" to
\frown		/		modify tl	he value.		
C Data block							
Base <u>a</u> ddress	: 1				0 Drivers		
<u>N</u> b items:	16					BUS Master	
d Activation	1				MODBUS Master a	11	
<u>Periodic:</u>	2000 ms	15000			First valid MODBUS		
O On call	2000					aduresses	ОК
On change		(on error)			Input <u>b</u> its:	1	Cancel
Misc.			on can not app	ly	\underline{C} oil bits:	1	
e <u>Timeout</u> :	250 ms	to the Re	ead" request.		Input registers:	1	
					Holding registers	;; 1	
Nb trials:	1				<u>Holding</u> registers		
2. Next, open th	ie "Variables" v	vindow and	then declare	variables	that are avail	able for the	e program.
Workspace		O Drivers					
🖃 🗍 Test_0	l	18 🗆 Mo M	ODBUS Master		Name	Value	
	eption programs	유 효 물	т RTU: COM2:960		Request		ad Input Bits
	rams	*8	* <2> Read Inp	put Bits (1) [1			
Second States and States	Main	-			Address	1	
	ch (for debuggi	Tips:			Nb Item Activation	16 Periodic	12
	a values	Press "I	1" key to viev	v the detai			
	ing Configuration	rs.	MODBUS Mas		1 onod fille		
		ġįį			Timeout (m		
🚮 Varia	ables 🛌 👘	210			Number of	6.6.0.c	
Е Туре	28	≣+			Description	n	
Double cli	ck it to open th	e window.	Operatio	on	Offset	Mask	1
			opordu		enour	- HON	
		<		1			1000
		2	1111				
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Declaring 16 va record the state <u>Win-GRAF Getti</u> shows defined v	e of data access ing Started Mar	(Name: "S	Status"; Dim.: 5	; Type: D	INT). If not fa	miliar with tl	his, refer the
Variables	ype Dim. Attrib	s Sub I	Init value User Tag	Descriptio			
 ☐ Global variat Bool_01 Bool_02 Bool_03 Bool_03 Bool_04 Bool_05 Bool_06 Bool_07 Bool_08 Bool_08 			Bool_16 Status	BO			
Bool_10 B	OOL OOL					×	
Bool_12 B Bool_13 B Bool_14 B Bool_15 B	00L 00L 00L 00L 00L		Bool_16 Status	BO DIN			
"Bool_01" to <u>Note:</u> The "S Click 4. Next, select " the left side t	vers" window li "Bool_16" and tatus" is an arra the "Del" key t o Offset" field fro o set the "Offse	"Status") ; ay variable o delete tl om "Boo_C et" value (l	and drop them e, so, the Status he Status[1] to 01" to "Boo_16"	to the "S [0] to Sta Status[4 ' and the	Symbol" area i atus[4] will sha]. en click the "It	n the first da ow on the "S erate Proper	ata block. Symbol" area. 'ty" button or
<u>Manual</u> (Sect	ion 3.1 – Step8)	•					
•	ition" field, set i if a read error c			•			

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10 Drivers *									HZ
	S Master	1	Vame	Valu	ie		7	Name	Туре
붋 🖮 🖁 🖁	J: COM2:9600,N,8,1	F	Request	<2> F	Read Input B	lits	<u> </u>	Bool 01	BOOL
······································	<2> Read Input Bits (1)	[116]	ilave/Unit	1.				Bool_02	BOOL
			uddress	1			~	Bool_03	BOOL
Symbol	Operation	Offset	Mask St	orage		Rang	e (Li	Bool_04	BOOL
Bool_01	Data exchange	0	FFFF De	fault				Bool_05	3 BOOL
Bool_02	Data exchange	1	FFFF De	fault				Bool_06	BOOL
000_00	Data exchange	10.1		fault				Bool_07	BOOL
p Bool_04	Data exchange			fault				Bool_08	BOOL
Bool_05	Data exchange		1000 C	fault – T				Bool_09	BOOL
H Bool_06	Data exchange			fault				Bool_10	BOOL
Bool_07	Data exchange		1446 - CC	fault				Bool_11	BOOL
Bool_08	Data exchange	1.00		fault				Bool_12	BOOL
800_09	Data exchange	1.30	M88 0.1	fault				Bool_13	BOOL
300L10	Data exchange			fault				Bool_14	BOOL
Bool_11	Data exchange	100000	966 S 33	fault				Bool_15	BOOL
Bool_12	Data exchange	and the second	지하는 것은	fault				Bool_16	BOOL
Bool_13	Data exchange	1.	11222 OT	fault				Status	DINT
Bool_14	Data exchange			fault					>
Bool_15	Data exchange		FFFF De	22					
Bool_16	Data exchange		FFFF De						<u> </u>
Status[0]	Data exchange	0	FFFF De	tau Nan	ne	%			
<	101								
10 Drivers	The "Offset" mu	ust be "0'	" when	Fror	n: O	\$		By:	1 🗘
	selecting the "E	rror repo	ort".						
Bool 16	-				esults				
Status[0]	D Data exchan	ge		0					
	Error report			1					
<	On-going req			3					
IO Drivers	Variat Success cou	nter		4					
Build	Fail counter Retry counte	r		5					
	Command (or			7					
	Command (er								
	Reset counte	93 93						OK	Cancel
ou can also pre	ess "F1" in this "I	O Driver	s" windov	v to se	e details	on Mc	dbus N	laster Cor	nfiguration.
Error Code	D	escriptio	n		Error Co	de		Descrip	tion
0	The communi	cation is	OK.		8	C	Data Pa	rity Error.	
1									

1	MODBUS function not supported.	10	Invalid gateway path.
2	Invalid MODBUS address.	11	Gateway target failed.
3	Invalid MODBUS value.	128	Communication timeout.
4	MODBUS Server failure.	129	Bad CRC16.
6	Server is busy.	130	RS-232 communication error.
	, , , , , , , , , , , , , , , , , , ,		I

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1. Using the san	ings in the "MOI		•	vindow, a			leting all the
Request Description: Slave/Unit: MODBUS Request <3> Read Holt <4> Read Inp <5> Write sind	2 a st ding Registers ut Registers	(on error)	b	a. <u>9</u> E (b. <u>N</u> S c. <u>E</u> S (d. <u>C</u> T (d. <u>C</u> T (e. <u>T</u> V t F	Slave/Unit: Slave/Unit: Enter the Net-I AODBUS Requination Select "<5> With Base address: Start from "1" Refer the Section on call: The request is program call to Refer the Section imeout: Set a When time-out the defined er recommended RTU/ASCII dev n this case the	D is "2"). <u>lest</u> : rite single co by default. <u>tion 1.1.1</u> to activated who o send it <u>tion 1.1.1</u> for timeout valu t occurred, i ror code. (The l value for the ice is 200 to	il bit". change it.) nen a r details) ue. t will show ne e Modbus 1000 ms.

2. Next, open the "Variables" window and then declare variables that are available for the program.

Workspace	IO Drivers *		
🖃 🗐 Test_01	📙 🖃 Mod Mod BUS Master	Name	Value
🖶 🦳 🔚 Exception programs	品 BTU: COM2:9600,N,8,1	Request	<5> Write single coil bit
📄 🧰 Programs	*** *** <2> Read Input Bits (1) [116]	Slave/Unit	2
🛄 🗗 Main	Co> write single coll bit (2) [11]	Address	1
🚖 🔤 Watch (for debuggi		Nb Item	1
Soft Scope	Tins:	Activation	On Call
📰 Initial values		Period (ms)	0
	Press "F1" key to view the details	Period on error	0
🚽 🛐 Global defines	igon the MODBUS Master settings.	Timeout (ms)	250
		Number of trials	1
E Types	≣+	Description	
Double click it to open	the window.		
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Add two Bool Getting Starte					-		ith this	s, refer	the <u>Win</u>	-GRAF
Variable nam	e Dat	ta type	Descri	ption						
DO_0	B	BOOL	Used t	o Write dig	ital output d	lata.				
Act_0	B	300L		case, choos a variable to	se the "On ca o call it.	all" way	to writ	te data	that me	ans
After complet	ing the se	ettings, t	he defin	ed variable	s show as be	elow:				
Variables						115.1			1.5	
Vame			ype	D. V Attri	ib. Syb.	Init valu	ie Use	r Tag) Des	cription
DO_0			DOL							-
Act_0			DOL							~
ID Drivers V	/ariables									2
I TO Drivers	anables									
3. In the "IO Dri Section 1.1.1			-	—	· —		•			he
Note: The "Status[0]" to "Status[0]" to 10 Drivers *		-		-	-		-			
TO DITIONO										H Z X
	S Master		1	Name	Value		🝸 Nan	ne	Туре	Dim. Att
		D.N.8.1		100 Million -	0.000000	e coil bit	<mark>7 Nan</mark> Bo		Type BOOL	Dim. Att
B D - 品 RTU	: COM2:9600		F	Name Request Slave/Unit	<5> Write single	e coil bit	Bo	ool_11	BOOL	
₩ È···· ♣ RTU	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] F	?equest 31ave/Unit	0.000000	e coil bit	Bo	ool_11 ool_12		
₩ È···· ♣ RTU	: COM2:9600	out Bits (1) [1	16] F 16] 9][11] 7	Request	<5> Write single 2	e coil bit	Bo Bo Bo	ool_11	BOOL BOOL	
₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] [F 9 9 [11] [A 1	Request Blave/Unit Address	<5> Write single 2 1	e coil bit	Bo Bo Bo	ool_11 ool_12 ool_13 ool_14	BOOL BOOL BOOL	
□ □ </td <td>: COM2:9600 (2> Read Inp</td> <td>out Bits (1) [1</td> <td>16] [F 9][11] [A 1 4 4</td> <td>Request Blave/Unit Address No Item</td> <td><5> Write single 2 1 1</td> <td>e coil bit</td> <td>Bo Bo Bo Bo</td> <td>ool_11 ool_12 ool_13</td> <td>BOOL BOOL BOOL BOOL BOOL</td> <td></td>	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] [F 9][11] [A 1 4 4	Request Blave/Unit Address No Item	<5> Write single 2 1 1	e coil bit	Bo Bo Bo Bo	ool_11 ool_12 ool_13	BOOL BOOL BOOL BOOL BOOL	
₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] F (11) / (11) / / F	Request Mave/Unit Address No Item Activation	<5> Write single 2 1 1 On Call	e coil bit	Bo Bo Bo Bo Bo	ool_11 ool_12 ool_13 ool_14 ool_15	BOOL BOOL BOOL BOOL	Dim. Att
□ □ </td <td>: COM2:9600 (2> Read Inp</td> <td>out Bits (1) [1</td> <td>16] [F 9 1 1 1 4 1 4 4 5 5</td> <td>Request Gave/Unit Address Notem Activation Period (ms)</td> <td><5> Write single 2 1 1 On Call 0</td> <td>e coil bit</td> <td>Bo Bo Bo Bo Bo Bo St</td> <td>ool_11 ool_12 ool_13 ool_14 ool_15 ool_16</td> <td>BOOL BOOL BOOL BOOL BOOL BOOL</td> <td></td>	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] [F 9 1 1 1 4 1 4 4 5 5	Request Gave/Unit Address Notem Activation Period (ms)	<5> Write single 2 1 1 On Call 0	e coil bit	Bo Bo Bo Bo Bo Bo St	ool_11 ool_12 ool_13 ool_14 ool_15 ool_16	BOOL BOOL BOOL BOOL BOOL BOOL	
	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] F 9 1 [11] / 1 4 F F 7	Request Slave/Unit Address No Item Activation Period (ms) Period on error	<5> Write single 2 1 1 0n Call 0 0	e coil bit	Bo Bo Bo Bo Bo St D(ool_11 ool_12 ool_13 ool_14 ool_15 ool_16 atus	BOOL BOOL BOOL BOOL BOOL BOOL	Dim. Att
□ □ </td <td>: COM2:9600 (2> Read Inp</td> <td>out Bits (1) [1</td> <td>16] F 9 1 (11) / 7 7 7 7 7 7 7 7 7 7</td> <td>Request Slave/Unit Address Ab Item Activation Period (ms) Period on error Timeout (ms)</td> <td><5> Write single 2 1 1 0n Call 0 250</td> <td>e coil bit</td> <td>Bo Bo Bo Bo Bo St D(</td> <td>001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0</td> <td>BOOL BOOL BOOL BOOL BOOL DINT BOOL</td> <td>Dim. Att</td>	: COM2:9600 (2> Read Inp	out Bits (1) [1	16] F 9 1 (11) / 7 7 7 7 7 7 7 7 7 7	Request Slave/Unit Address Ab Item Activation Period (ms) Period on error Timeout (ms)	<5> Write single 2 1 1 0n Call 0 250	e coil bit	Bo Bo Bo Bo Bo St D(001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL	Dim. Att
	: COM2:9600 (2> Read Inp (5> Write sing	out Bits (1) (1 gle coil bit (2	16] (11) / (11) / / / / / / / / / /	Request Slave/Unit Address No Item Period (ms) Period on error Timeout (ms) Number of trials Description	<5> Write single 2 1 1 0n Call 0 250 1		Bo Bo Bo Bo Bo St D(001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL	Dim. Att
R BTU R BTU R RTU R RTU	: COM2:9600 (2> Read Inp (5> Write sing (5> Operatio	out Bits (1) [1 gle coil bit (2	16] / / / / / / / / / / / / / / / / / / /	Request Slave/Unit Address Voltem Activation Period (ms) Period on error Timeout (ms) Number of trials Description	<5> Write single 2 1 1 0n Call 0 250 1 3ge	e coil bit	Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
H Image: Symbol Image: Symbol Status[1]	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing (5) Write sing (5) Write sing (5) Operatio (5) Error repo	out Bits (1) [1 gle coil bit (2 printing and the second se	16]	Request Slave/Unit Address Voltem Activation Period (ms) Period on error Timeout (ms) Number of trials Description	<5> Write single 2 1 1 0n Call 0 250 1 1 age		Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
H Image: Symbol Status[1] DO_0	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing (5) Deratio (5) Error repo	out Bits (1) [1 gle coil bit (2 printing and the second se	16] F 9 1 [1.1] / 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Request Slave/Unit Address No Item Activation Period (ms) Period on error Timeout (ms) Jumber of trials Description Mask Stor EFEF — — Defat	<5> Write single 2 1 1 0n Call 0 250 1 250 1 age		Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
H Image: Symbol Image: Symbol Status[1] DD_0 Act_0	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing Error repo Data exc Command Data e	ut Bits (1) [1 gle coil bit (2 n ort hange d (one shot) exchange	16] F 9 1 [1.1] / 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Request Slave/Unit Address No Item Activation Period (ms) Period on error Timeout (ms) Number of trials Description Mask Stor EFEF Defat FFFF Defat	<5> Write single 2 1 1 0n Call 0 250 1 250 1 age	Fian	Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
Image: Barry status Image: Barry status Ima	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing Error report Data exc Command Data e Error re	out Bits (1) [1 gle coil bit (2 on ort hange d (one shot) exchange eport	16] F 9 11.11 / 7 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Request Slave/Unit Address No Item Activation Period (ms) Period on error Timeout (ms) Number of trials Description Mask Stor EFEF Defat FFFF Defat	<5> Write single 2 1 1 0n Call 0 250 1 250 1 age		Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
Image: Barry status Image: Barry status Ima	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing Error reported Data exc Command Data e Error re Error re	ut Bits (1) [1 gle coil bit (2 on hange d (one shot) exchange eport eport (Set or	16] F 9 11.11 / 7 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Request Slave/Unit Address No Item Activation Period (ms) Period on error Timeout (ms) Number of trials Description Mask Stor EFEF Defat FFFF Defat	<5> Write single 2 1 1 0n Call 0 250 1 250 1 age	Fian	Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
Image: Barry status Image: Barry status Ima	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing Error repo Data exc Command Data e Error re Data e Error re On-goi Succe	ut Bits (1) [1 gle coil bit (2 bit port hange d (one shot) exchange eport eport sport (Set or ng request ss counter	16] F 9 11.11 / 7 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Request Slave/Unit Address No Item Activation Period (ms) Period on error Timeout (ms) Number of trials Description Mask Stor EFEF Defat FFFF Defat	<5> Write single 2 1 1 0n Call 0 250 1 250 1 age	Fian	Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att
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H Image: Symbol Image: Symbol Status[1] DD_0 Act_0	: COM2:9600 (2> Read Inp (5> Write sing (5> Write sing Error repo Data exc Command Data exc Command Succe Fail co Reset Slave: Slave: Slave: Slave:	out Bits (1) [1 gle coil bit (2 gle coil bit (2 hange d (one shot) exchange eport sport (Set or ng request ss counter unter counter and (one shot) counters last error last error da	16])(11) / / / / / / / / / / / / /	Request Slave/Unit Address No Item Activation Period (ms) Period on error Timeout (ms) Number of trials Description Mask Stor EFEF Defat FFFF Defat	<5> Write single 2 1 1 0n Call 0 250 1 250 1 age	Fian	Bo Bo Bo Bo St D(Ao	001_11 001_12 001_13 001_14 001_15 001_16 001_16 001_10 001_0	BOOL BOOL BOOL BOOL BOOL DINT BOOL BOOL	Dim. Att

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- 4. Set the "Operation" field of the "Status[1]" as "Error report" (that means this variable will be set to an error code when a read error occurs, or reset it to "0" when a read request is successful). Press the "F1" key to see the description of the Modbus Master Configuration and move to the title "Status and command variables" to know related commands and error codes.
- 5. Set the "Operation" field of "Act_0" as "Command (one shot)" (that means the request will be sent only once when "Act_0" is set to "TRUE". Then, this "Act_0" will auto reset to "FALSE"). The "Command (Enable)" means the request is sent continuously as long as the "Act_0" is "TRUE". So, users can set the "Act_0" to "FALSE" to stop sending command.

1.1.3. Read AI Data

1. Using the same way in the <u>Section 1.1</u> - Step 4 to create the third data block and completing all the following settings in the "MODBUS Master Request" window, and then click "OK".

MODBUS Master Request		<u>In</u>	this example
Request		a.	<u>Slave/Unit</u> :
Description:	ОК		Enter the Net-ID of the Slave device.
Slave/Unit: 3	Cancel		(e.g., the Net-ID is "3").
MODBUS Request		b.	MODBUS Request:
<2> Read Input Bits			Select "<4> Read Input Registers".
<3> Read Holding Registers <4> Read Input Registers <5> Write cipple call bit	 (b)	с.	<u>Base address</u> :
LZES Write cingle coil bit			Start from "1" by default.
Data block			(Refer the <u>Section 1.1.1</u> to change it.)
Base <u>a</u> ddress: 1			<u>Nb items</u> :
Nb items: 10			The number of AI signals to write.
Activation			(In this case, the number is "10").
d OPeriodic: 1000 ms	15000	d.	Periodic: (Refer the Section 1.1.1)
On call	(on error)		Sending the request periodically.
O On change	This option can not apply		(In this case, to send once per second.)
Misc.	to the "Read" request.		
e <u>T</u> imeout: 250 ms	•	1	"on error" means the next sending
Nb trials: 1			time when an exception occurred
TND GTGIS:			(e.g., 15 seconds).

When time-out occurred, it will show the defined error code. (The recommended value for the Modbus RTU/ASCII device is 200 to 1000 ms. In this case the value is 250 ms.)

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•	e "Variable			l then declare v	ariables	that are availa	able for	the program.	
Workspace			vers *	UC Market		Name	1.1/-	live.	
🖻 — 📴 Programs							<4> 3 1	lue Read Input Register:	
🖨 🔁 Watch (fo			i*	<4> Read Input Reg	gisters (3) [1.	.10] Nb Item Activation	10 Per	iodic	
🔜 🔜 Initial valu	Jes		_			Period (ms)	100	0	
🔚 🚮 Binding C	Configuration		ninguration				Period on er	ror 150	000
🦳 😽 🚽 🔤 🦉	fines	¢'s	Press "F	1" key to view t	he detail	S Timeout (ms) 250	250	
Variables			on the N	/IODBUS Maste	r settings				
Variables		∎+				Description			

Follow the table below to add six Word (16-bit), one Double integer (32-bit) and one Real (32-bit) variables.

Variable name	Data type	Description
Word_1 to Word_6	WORD	Used to Read AI data (16-bit).
Long_1	DINT	Used to Read AI data (32-bit).
Real_1	REAL	Used to Read AI data (32-bit).

After completing the settings, the defined variables show as below:

Name	Туре	D. 🗸	Attrib.	Syb.	Init value	User	Tag	Description
Long_1	DINT	1	1					1
Word_1	WORD							
Word 2	WORD							
Word_3	WORD							
Word_4	WORD							
Word 5	WORD							
Word 6	WORD							
Real_1	REAL							
<				-				2

Note:

The user can refer the <u>Win-GRAF Getting Started Manual</u> - Section 2.3.1 for declaring variables. Refer the Appendix A for details on data type and ranges.

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3. In the "IO Drivers" window, drag variables - "Word_1 to Word_6", "Long_1", "Real_1" and "Status" (that created in the <u>Section 1.1.1</u>) from the Variables Area to the Symbol Area in the third data block.

<u>Note:</u> The "Status" is an array variable. When you drag "Status" into the Symbol Area, it will show "Status[0]" to "Status[4]", simply *press "Del" key to delete "Status[0] to [1]" and "Status[3] to [4]"*.

- 4. Set the "Operation" field of the "Status[2]" as "Error report" (that means this variable will be set to an error code when a read error occurs, or reset it to "0" when a read request is successful). Press the "F1" key to see the description of the Modbus Master Configuration and move to the title "Status and command variables" to know related commands and error codes.
- 5. Both the "Long_1" and the "Real_1" are 32-bit variables and require two Modbus addresses. So, set their "Storage" column as "DWORD (Low High)".

Image Manage Value Name Value Image: Status Status Value Image: Status	Request <4> Read Input Regis Slave/Unit 3 Address 1 Address 1 Nb Item 10 Activation Periodic Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Adsk Storage FFFF Default
Image: Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Main Word_5 Data exchange 0 FFFF Default Main Word_6 Data exchange 0 FFFF Default Main Word_5 Data exchange 0 FFFF Default Name Value	Slave/Unit 3 Address 1 Address 1 Nb Item 10 Activation Periodic Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Adain FEFF Default Main FFFF Default
Image: Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Main Word_5 Data exchange 0 FFFF Default Main Word_6 Data exchange 0 FFFF Default Default Name Vord_6 Data exchange 0 FFFF Default DWORD (Low - High) Name Value	Address 1 Nb Item 10 Activation Periodic Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 et Mask Storage FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default
Image: Control (2) (1) Addiess Image: Control (2) (1) Addiess Image: Control (2) (1)	Nb Item 10 Activation Periodic Period (ms) 1000 Period on err 15000 Period (ms) 250 Number of tri 1 Description 3 et Mask FFFF Default
Activation Periodic Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Status[2] Error report 0 FFFF Default 5	Activation Periodic Word_1 WORD Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 H Mask Storage FFFF Default FFFF Default
Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_5 WORD Word_6 Data exchange 0 Long_1 Data exchange 0 Real 1 Data exchange 0 FFFF Default WORD (Low - High) Name Value Value	Activation Periodic Word_1 WORD Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Main FEFF Default FFFF Default
Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_5 WORD Word_6 Data exchange 0 Vord_6 Data exchange 0 Vord_6 Data exchange 0 Status[2] Error report FFFF Default 5	Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 4 Word 3 WORD Word 4 WORD Word 5 WORD Word 5 WORD Word 6 WORD 4 Main FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default FFFF Default
Image: Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Name Value	Timeout (ms) 250 Number of tri 1 Description At Mask Storage FFFF Default FFFF Default
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Number of tri 1 Word 5 WORD Description 3 Word 5 WORD Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Name Value Value	Number of tri 1 Description Word 5 WORD Word 6 WORD WORD Word 6 WORD W
Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0 FFFF Default Word_6 Data exchange 0 FFFF Default Long_1 Data exchange 0 FFFF DWORD (Low - High) Real 1 Data exchange 0 FFFF Default Value Status[2] Error report FFFF Default 5 5	At Mask Storage FFFF Default FFFF Default FFFF Default FFFF Default FFFF DWORD (Low - High) FFFF Default FFFF Default FFFF Default FFFF DWORD (Low - High) FFFF Default
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Long_1 Data exchange 0 FFFF DWORD (Low - High) Real_1 Data exchange 0 FFFF DWORD (Low - High) Status[2] Error report 0 FFFF Default Image: Construction of the state	FFFF DWORD (Low - High) FFFF DWORD (Low - High) FFFF Default
Real_1 Data exchange 0 FFFF DWORD (Low - High) Status[2] Error report 0 FFFF Default Image: Comparison of the state of the stat	FFFF Default
Status[2] Error report 0 FFFF Default 5	FFFF Default
	5

Offset value (From: 0; By: 1). Image: Determine the set of the set	Offset value (From: 0; By: 1). Image: Symbol Operation Offset value (From: 0; By: 1). Image: Symbol Operation Offset value (From: 0; By: 1). Image: Symbol Operation Offset value (From: 0; By: 1). Image: Symbol Image: Symbol). nge 0 F nge 1 F	Mask Storage FFFF Default F Name % 1 From: 0 0 8y: 1 1 2 3 4 5 6 7 7 OK Cancel 1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_5 Data exchange 3 FFFF Default Vord_5 Data exchange 4 FFFF Default 	nge 0 F nge 0 F nge 0 F nge 0 F nge 0 F nge 0 F	FFFE Default
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 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_5 Data exchange 4 FFFF Default Word_5 Data exchange 6 FFFF Default Long 1 Data exchange 6 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and 'then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_5 Data exchange 3 FFFF Default Vord_5 Data exchange 5 FFFF Default 	nplete the sett	The set the se
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 4 FFFF Default Word_5 Data exchange 4 FFFF Default Word_5 Data exchange 4 FFFF Default Unit 1 Data exchange 6 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and 'then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	nplete the sett	The set the se
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 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_4 Data exchange 3 FFFF Default Vord_5 Data exchange 4 FFFF Default Vord_6 Data exchange 5 FFFF Default 	nplete the sett	OK Cancel g_1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_4 Data exchange 3 FFFF Default Vord_5 Data exchange 4 FFFF Default Vord_6 Data exchange 5 FFFF Default 	nplete the sett	OK Cancel g_1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_4 Data exchange 3 FFFF Default Vord_5 Data exchange 4 FFFF Default Vord_6 Data exchange 5 FFFF Default 	nplete the sett	OK Cancel g_1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_4 Data exchange 3 FFFF Default Vord_5 Data exchange 4 FFFF Default Vord_6 Data exchange 5 FFFF Default 	nplete the sett	OK Cancel g_1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Symbol Operation Offset Mask Storage Vord_4 Data exchange 3 FFFF Default Vord_5 Data exchange 4 FFFF Default Vord_6 Data exchange 5 FFFF Default 	nplete the sett	OK Cancel g_1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. <u>Note:</u> One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). <u>Symbol Operation Offset Mask Storage</u> Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. <u>Note:</u> One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). <u>Symbol Operation Offset Mask Storage</u> Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	nplete the sett	g_1" and "Real_1" items and set their values as "6" and "
 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and then press "Enter" key to complete the settings. <u>Note:</u> One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). <u>Symbol Operation Offset Mask Storage</u> Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	 Next, double click the Offset field of "Long_1" and "Real_1" items and set their values as "6" and "then press "Enter" key to complete the settings. <u>Note:</u> One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). <u>Symbol Operation Offset Mask Storage</u> Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default 	nplete the sett	g_1" and "Real_1" items and set their values as "6" and "
then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_ is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Image: Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Image: Symbol Complete the settings.	then press "Enter" key to complete the settings. Note: One 32-bit data requires two Modbus addresses. For instance, the Offset value of "Long_1 is "6" and the next Offset value must be set to "8" (i.e., "Real_1"). Image: Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default	nplete the sett	
Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF DWORD (Low - High)	Symbol Operation Offset Mask Storage Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default		
Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF DWORD (Low - High)	Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default	ffset value mus	ust be set to "8" (i.e., "Real_1").
Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF DWORD (Low - High)	Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default	Operation	Offset Mask Storage
Word_6 Data exchange 5 FFFF Default	Word_6 Data exchange 5 FFFF Default		
Word_6 Data exchange 5 FFFF Default	Word_6 Data exchange 5 FFFF Default	200	
Long 1 Data exchange 6 FFFF DWORD (Low - High)	TANDAS AND DESCRIPTION OF THE STATE AND	그는 한 것을 모양에 도둑을 위해 힘을 수 있다.	
	Long_1 Data exchange 6FFFFDWORD (Low - High)	12 S 28 28 3 1 2 2 3 7 7 7 7 8	6 FFFF DWORD (Low - High)
Real_1 Data exchange 8 🗳 🏲 🤤 DWORD (Low - High)			
	Real_1 Data exchange 8 🗳 💽 😴 DWORD (Low - High)	Data exchange	8 🖲 🍗 😂 DWORD (Low - High)
			8 C DwDRD (Low - High)
Press "Enter" key.	Status[2] Error report 0	Error report	
Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default Long 1 Data exchange 6 FFFF DWORD (Low - High)	Word_4 Data exchange 3 FFFF Default Word_5 Data exchange 4 FFFF Default Word_6 Data exchange 5 FFFF Default	ffset value mus	ust be set to "8" (i.e., "Real_1").
	Long_1 Data exchange 6FFFFDWORD (Low - High)	Data exchange Data exchange	4 FFFF Default 5 FFFF Default 6 FFFF DWORD (Low - High)
	Long_1 Data exchange 6 FFFF DWORD (Low - High)		6 PWORD (Low - High)
Real_1 Data exchange 8 🗳 📡 🤤 🗇 WORD (Low - High)		Data auchanaa	
	Real 1 Data exchange 8 🖻 🕒 🤤 DWORD (Low - High)	Data exchange	8 🛽 🝗 🤤 DWORD (Low - High)
	Status[2] Error report 0	Error report	
Real_1 Data exchange 8 🗳 🜪 🤤 DWORD (Low - High)		Data auchanza	
Real_1 Data exchange 8 🔍 💭 DWORD (Low - High)		Data aughanga	
	Real 1 Data evolution 0 0 🖸 🛌 👘 DV/ODD (Law, Uish)		
	Real_1 Data exchange 8 🗳 😿 🐷 DWORD (Low - High)	Data exchange	8 🖥 🛬 💲 DWORD (Low - High)
	Status[2] Error report 0		
Press "Enter" key.	Status[2] Error report 0	Error report	
	And the second se		Data exchange Data exchange Data exchange

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1. Using the sam	AO Data (16-bit) ne way in the <u>Se</u> tings in the "MO Request	<u>ction 1.1</u> -	•	vindow, a		•	ng all the
Description: Slave/Unit: MODBUS Reques <4> Read Inp <5> Write sing	ut Registers gle coil bit gle holding register		Cancel	Er (e b. <u>M</u> "< c. <u>B</u> å	nter the Net-II e.g., the Net-II IODBUS Reque <6> Write sing ase address: art from "1" b	D is "3"). <u>est</u> : Select de holding re	egister".
C Data block Base <u>a</u> ddress: <u>Nb</u> items: <u>Activation</u> <u>Periodic:</u> On call On change Misc.	1 1 0 ms	0 (on error)		d. <u>O</u> m ea (R e. <u>Tii</u> W th	efer the <u>Sections</u> n change: In eans that the ach time any v efer the <u>Sections</u> <u>meout</u> : Set a to hen time-out e defined erro	n case of a w request is a variable char on <u>1.1.1</u> for imeout value occurred, it or code. (The	rite request, ctivated ged. derails.) e. will show
e <u>T</u> imeout: Nb trials:	250 ms			th	TU/ASCII devid	lue is 250 m	s.)
 Next, open th Workspace 	e "Variables" w		then declare v	variables	that are avail	able for the	program.
	and the second se	Modbu	JS Master		Name	Value	
the Exception			U- COM2-9600 N 8 1		Peque		rite single holding

Test_01	📔 🖃 Modbus Master	Name	Value
🗄 🛅 Exception programs	표 由 뭚 RTU: COM2:9600,N,8,1	Request	<6> Write single holding
🖻 🛄 Programs	□	Slave/Unit	3
🛄 Main	*■ ••■ <5> Write single coil bit (2) [11]	Address	1
🗐 📄 Watch (for debuggi	*** <4> Read Input Registers (3) [110]	Nb Item	1
Soft Scope	₹ <6> Write single holding register (3) [11]	Activation	On Change
🔤 Initial values		Period (ms)	0
		Period on error	0
		Timeout (ms)	250
	Press "F1" key to view the details	Number of trials	1
E Types	on the MODBUS Master settings.	Description	
Double-click it to open t	this window.		
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Declaring a "WORD" variable. (If not familiar with this, refer the <u>Win-GRAF Getting Started Manual</u> - Section 2.3.1 and Appendix A for details on declaring variables, data types and ranges.

Variable name	Data type	Description
Word_Write_1	WORD	Used to write AO data (16-bit).

After completing the settings, the defined variables show as below:

Name	Туре	D.7	Attrib.	Syb.	Init value	User	Tag	Description
Word Write 1	WORD							

3. In the "IO Drivers" window, drag variables - "Word_Write_1" and "Status" (that created in the <u>Section 1.1.1</u>) from the Variables Area to the Symbol Area in the 4th data block.

<u>Note</u>: The "Status" is an array variable. When you drag "Status" into the Symbol Area, it will show "Status[0]" to "Status[4]", *simply press "Del" key to delete "Status[0] to [2]" and "Status[4]*".

4. Set the "Operation" field of the "Status[3]" as "Error report" (that means this variable will be set to an error code when a read error occurs, or reset it to "0" when a read request is successful). Press the "F1" key to see the description of the Modbus Master Configuration and move to the title "Status and command variables" to know related commands and error codes.

10 D	rivers *										×Ν
周	E Mo MODBUS	Master		Name	Value	i.	7	Name	∇	Туре	
쁆	🖮 🚠 RTU:	COM2:9600,N,8,1		Request	<6> Write sin	ngle holdi		🖂 🚮 Glob:	al varia	bles	^
	Ė ⊸*≣ <2	2> Read Input Bits (1)	[116]	Slave/Unit	3			Word_Wri	te_1	WORD	_
*8	Ē —"≣ </td <td>5> Write single coil bit</td> <td>(2) [11]</td> <td>Address</td> <td>1</td> <td></td> <td></td> <td>VVord_6</td> <td>1</td> <td>WORD</td> <td></td>	5> Write single coil bit	(2) [11]	Address	1			VVord_6	1	WORD	
ţ		4> Read Input Regist	ers (3) [110]	Nb Item	1			Word_5		WORD	
		6> Write single holding	g register (3) [11]	Activation	On Change			Word_4		WORD	
				Period (ms)	0			Word_3		WORD	
				Period on err	0			Word_2		WORD	
¢.				Timeout (ms)	250			Word_1		WORD	_
2.2				Number of tri	1			Status		DINT	
₿ŧ				Description				Cool 1		DEAL	>
		Le						and a second second	Lana		
	Symbol	Operation	Offset Mas			Range (Lo	Na	ime	Valu	le	
	Word_Write_1	Data exchange									
	Status[3]	Error report	0 FFFF	Default							
	<			F		>					
< >		/ariables		P			-				
Contract of the second	4										
·			ICP DAS C	o., Ltd. Tech	nical Doc	ument					

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Author	Janice Hong	Version	1.0.0	Date	Dec. 2015	Page	15 / 16
1.1.5. Write A 1. Using the sam following sett MODBUS Master Request Description: Slave/Unit: MODBUS Reque <6> Write sin <15> Write C	AO Data (32-bit) ne way in the <u>Sec</u> tings in the "MO t Request 4 a st st gle holding register	<u>ction 1.1</u> -	Step 4 to creat	te the S vindow Main a.	5th data block a , and then click <u>this example</u>	and complet and complet "OK". -ID of the SI -ID is "4"). <u>Juest</u> : Write Holdin : Write Holdin : y default.	ing all the ave device. ng Registers". o change it.)
Activation Periodic: On call On change Misc. e Iimeout:	0 ms	0 (on error)		d.	(In this case, the F because the F Modbus addr <u>On change</u> : In means that the each time any	REAL type reess). a case of a w ne request is	quires two rrite request, activated
Nb trials:	1				(Refer the <u>Sec</u>	<u>ction 1.1.1</u> f	or details)

- e. <u>Timeout</u>: Set a timeout value. When time-out occurred, it will show the defined error code. (The recommended value for the Modbus RTU/ASCII device is 200 to 1000 ms. In this case the value is 250 ms.)
- 2. Next, open the "Variables" window and then declare variables that are available for the program.

Workspace	10 Drivers *		
Workspace Test_01 Exception programs Programs Main Watch (for debuggi Soft Scope Initial values	Image: Model of the state	Name Request Slave/Unit Address Nb Item Activation Period (ms)	Value <16> Write Holding R 4 1 2 On Change 0
 Initial values Binding Configuration Global defines Variables Types 	Tips: Press "F1" key to view the details on the	Period on error	0
Double-click it to open t			

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Declaring a "Real" variable. (If not familiar with this, refer the <u>Win-GRAF Getting Started Manual</u> - Section 2.3.1 and Appendix A for details on declaring variables, data types and ranges.

Variable name	Data type	Description
Real_Write_1	REAL	Used to write AO data (32-bit).

After completing the setting, the defined variable shows as below:

lame	Туре	D. 🗸	Attrib.	Syb.	Init value	User	Tag	Description
Real_Write_1	REAL						-	

3. In the "IO Drivers" window, drag variables - "Real_Write_1" and "Status" (that created in the <u>Section 1.1.1</u>) from the Variables Area to the Symbol Area in the 5th data block.

<u>Note</u>: The "Status" is an array variable. When you drag "Status" into the Symbol Area, it will show "Status[0]" to "Status[4]", simply *press "Del" key to delete "Status[0] to [3]"*.

- 4. Set the "Operation" field of the "Status[4]" as "Error report" (that means this variable will be set to an error code when a read error occurs, or reset it to "0" when a read request is successful). Press the "F1" key to see the description of the Modbus Master Configuration and move to the title "Status and command variables" to know related commands and error codes.
- 5. The "Real_Write_1" is a 32-bit data and required two Modbus addresses. So, set its "Storage" field as "DWORD (Low High)".

🖃 - Mo MODBUS Master		Name	Value		🝸 Name	🛆 Туре	
白		Request	<16> Write H	olding R	Bool_15	BOOL	1
	.16]	Slave/Unit	4		Bool_16	BOOL	
	[11]	Address	1		DO_0	BOOL	
😐 📲 <4> Read Input Registers	(3) [110]	Nb Item	2		Long_1	DINT	
🗄 📲 <6> Write single holding re	gister (3) [11]	Activation	On Change		Real_1	REAL	- 1
😟 📲 <16> Write Holding Regist	ers (4) [12]	Period (ms)	0		Real_Write_	1 REAL	
		Period on err	0		Status	DINT	-
		Timeout (ms)	250		Word_1	WORD	-
		Number of tri	1	11	Word_2	WORD	
		Description		-	10/	MODD	2
Symbol / Operation	Offset Mask	Storage		Range (Lc	Name	Value	
Real_Write_1 🗲 Data exchange	0 FFFF	DWORD (L	ow - High)				
Status[4] Error report	0 FFFF	Default					
<	(>			
10 Drivers Variables							
		., Ltd. Tech					