

Follow these steps:

1. Click the "Open Fieldbus Configuration" tool button to open "IO Drivers" window.

Wm 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
27 🛃 🖹 🛃 X 🖬 🛱	s 🔀 🔁 🗠 🗠 🛗 🗰 🏭 😘 😨 🖓 🖻 🚱 🔐 🎽 🔊
Workspace	10 Drivers
🖃 🖅 🗊 Test_01	Name Value Type
🗄 🚞 Exception programs	🛄 🚮 Global variables 🔮
🚊 🖳 🔁 Programs	RETAIN variables
🛄 Main	🗋 🛄 Main
🚊 🚞 Watch (for debuggi	🙄 📲 pOnBadindex
Soft Scope	📊 POnDivZero
🔛 Initial values	
📶 📶 Binding Configuration	Name Value
🚽 😽 🚽 Global defines	<u>د المعام الم</u>
🚮 Variables	
E Types	Build
	Build, Cross references, Runtime, Call stack, Breakpoints, Digital sampling trace, Promp
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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
				🚮 GI	lobal variables 🛛 🔼
**				🚽 RE	ETAIN variables 📃
- E #	Add Configuration				$\mathbf{\overline{X}}$
	Choose a configuration				ОКЪ
	(All)				
	MODBUS				Cancel
¢¦ø	MODBUS Mas	ster			
	MODBUS Slav	/e			

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".

-M <mark>o</mark> MODBUS M	aster	Name Value	7	Name	Туре	
				<u></u>	Global variables	s 🔥
					RETAIN variable	es 🔤
MODBUS Master	r Port		×		Main	
Coursel		OK		28	pOnBadIndex	
	Ethernet		K		pOnDivZero	~
<u>A</u> ddress:		Cancel		<		>
e <u>P</u> ort:	502		ð	ame	Value	
Pr <u>o</u> tocol:	TCP - Open MODBUS					>
	UDP - MODBUS RTU					
		If wi	sh to	set it a	as a Modbus 🖊	ASCII
		Mas	ter, c	hange	the setting to	,
Serial MODB	US-RTU	"ASC)M2:9	600,N,8,1"	
⊆om. port:	COM2:9600,N,8,1	— T				
Delay between i	requests	Afte	r rece	eiving	the respond, v	vaiting
Delay (ms):	10	10 m	is to :	send t	he next comm	and
Try to reconne	ct after communication en	ror				
Manage diagno	ostic info for slaves	Sele	ct "Di	isableo	d" if you do no	ot want
Disabled (do p	ot open and manage this p	oort) to us	se thi	s CON	l Port setting.	

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

IO E)rivers		
E	Model Master	Name	Value
유		Mode	RTU
*		Address	COM2:9600,N,8,1
_ _		Port	502
÷	\mathbf{N}	Reconnect after error	Image: A start of the start
		Slaves diagnostics	
		Delay between requests (ms)	10
		Disabled	

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

ltem	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".
 - Enter the Net-ID of the Slave device. (In this case, the Net-ID is "1"). a. <u>Slave/Unit</u>:
 - b. <u>MODBUS Request</u>: Select "<2> Read Input Bits" option.

c. <u>Base address</u> :	Start from "1" by default.
<u>Nb items</u> :	The number of DI signals to read.(In this case, the number is "16").
d. Activation:	The way to send the Modbus request.
<u>Periodic</u> :	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:	The request is activated when a program call to send it.
On change:	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					5	
MODBUS Maste	er Request						
Request	T.						
Description:				\prec			
<u>S</u> lave/Unit:	1 (a		Cancel				
				<u>Note:</u>			
MODBUS Requ	est		\frown	lf you wa	int to change	the "Base a	address",
<1 > Read C <2 > Read In	oil Bits Iout Bits			right-clic	k the "MODE	BUS Master"	and then
<3> Read H	olding Registers	~		select th	e "MODBUS I	Master Add	resses" to
	Dut llogistore	/		modify t	he value		
C Data block				mouny ti			
Base <u>a</u> ddress	: 1				0 Drivers		
<u>N</u> b items:	16)BUS Master 🍗	
	hd						
Activation	2000	15000			MODBUS Master a	ddresses	×
Op call		15000			First valid MODBUS	5 addresses	ОК
		(on error)			Input <u>b</u> its:	1	Cancel
Micc		This optic	on can not app	ly	<u>⊂</u> oil bits:	1	
e Tingent	250 ms	to the "Re	ead" request.		Input registers:	1	
Limeout:	230	8			Helding vegisters		
Nb trials:	1				Holding registers	;	
2. Next, open th	ie "Variables" v	vindow and	then declare	variables ⁻	that are avail	able for the	program.
Worksnace		lő Drivers					
E- 1 Test 0		HE ⊡-Mon M	ODBUS Master		Name	Value	
Exce	eption programs		* RTU: COM2:960	0,N,8,1	Request	<2> Rea	ad Input Bits
🖨 🔁 Prog	rams	**	*🗧 <2> Read Inj	out Bits (1) [1	.16] Slave/Unit	: 1	1.5
Đ	Main				Address	1	
🖻 🛄 Wat	ch (for debuggi	Tins			Nb Item	16	
	Soft Scope	Press "I	-1" kev to viev	v the deta	Activation	Periodic	8
🛄 Initia 🚛 nitia	i values	on the	MODBUS Mas	ter setting	S. Period (ms)	J 2000	
	al defines	all _			Timeout (m	enor 15000 vs) 250	
	ables	46			Number of	trials 1	
E Type	88	∃ +			Description	h	
Double di	ck it to open th	e window	0		0444	- March	
			Operation	211	Oliset	Mask	
	-	4					>
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Declaring 16 variables to read data (Name: "Boo_01 to Boo_16"; Type: BOOL) and one array variable to record the state of data access (Name: "Status"; Dim.: 5; Type: DINT). If not familiar with this, refer the <u>Win-GRAF Getting Started Manual</u> (Section 2.3.1) for the way to declare variables, and the figure below shows defined variables.											
shows defined	l variables.	\	, -	ine nay to		ores, and t					
shows defined	l variables.	\	, .								
shows defined Variables	l variables.	trib. Syb.	Init value User	Tag Descripti							
shows defined	I variables.	trib. Syb.	Init value User	Tag Descripti	on	oles, und t					
shows defined	I variables.	ttrib. Syb.	Init value User	Tag Descripti		oles, and t					

Bool_03 BOOL				
Bool_04 BOOL				
Bool_05 BOOL				
Bool_06 BOOL		-1.40 000	.1	
Bool_07 BOOL		01_16 BOO	L	
Bool_08 BOOL	🗆 🗌 Sta	atus DINT		()
Bool_09 BOOL			5	^
Bool_10 BOOL				
Bool_11 BOOL				
Bool_12 BOOL			JL	
Bool_13 BOOL			\sim	
Bool_14 BOOL	Bo	ol 16 BOO		
Bool_15 BOOL				
Bool_16 BOOL		atus DINT	[04]	
				-
IO Drivers Variables				

3. In the "IO Drivers" window like the figure below, drag all required variables in the Variables Area (i.e., "Bool_01" to "Bool_16" and "Status") and drop them to the "Symbol" area in the first data block.

Note: The "Status" is an array variable, so, the Status[0] to Status[4] will show on the "Symbol" area. Click the "Del" key to delete the Status[1] to Status[4].

- Next, select "Offset" field from "Boo_01" to "Boo_16" and then click the "Iterate Property" button on the left side to set the "Offset" value (From: "0"; By: "1"). Refer the <u>Win-GRAF Getting Started</u> <u>Manual</u> (Section 3.1 – Step8).
- 5. In the "Operation" field, set the "Status[0]" as "Error report" which means the return value is an "Error Code" if a read error occurred and the value will be reset to "0" if read successfully.

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IC) Drivers *	·	•	·		•		• 	
F		S Master	Na	me 🛛	/alue		7	Name	Type /
H	- 📩 RTU	J: COM2:9600,N,8,1	Red	guest <	2> Read Input	Bits	~	Bool 01	BOOL
5	· · · · · · · · · · · · · · · · · · ·	<2> Read Input Bits (1)	[116] 6la	ve/Unit 1				Bool 02	BOOL
			Add	tress 1			~	Bool 03	BOOL
-	⊃ Symbol 🦯	Operation	Offset M	lask Storage		Rang	je (Li	Bool 04	BOOL
E	Bool_01	Data exchange	0 FF	FF Default				Bool 05	3 BOOL
	Bool_02	Data exchange	1 FF	FF Default				Bool 06	BOOL
E	Bool_03	Data exchange	2 FF	FF Default				Bool 07	BOOL
è	5 Bool_04	Data exchange	3 FF	FF Default			1	Bool 08	BOOL
_	Bool_05	Data exchange	4 _ FE	FE _ Default '		-		Bool 09	BOOL
E	H Bool 06	Data exchange	5 FF	FF Default				Bool 10	BOOL
F	Bool 07	Data exchange	6 FF	FF Default				Bool 11	BOOL
Ľ	Bool 08	Data exchange	7 FF	FF Default				Bool 12	BOOL
	Sool 99	Data exchange	8 FF	FF Default				Bool 13	BOOL
4	dool 10	Data exchange	9 FE	FE Default				Bool 14	BOOL
	Bool 11	Data evchange	10 FF	FF Default				Bool 15	BOOL
	Bool 12	Data exchange	11 FE	FF Default				Bool 16	BOOL
	Bool 12	Data evoluando	12 55	FF Default				Status	DINT
	Bool 14	Data evoluando	12 55	FE Default				Status	DINT
	DOUL14 Real 15	Data exchange	14 00	FF Delauk					2
	Dout 10	Data exchange	14 15	FF Defau					
	D00[10	Data exchange							
	Status[0]	Data exchange	0 11	rr Delau	Name	%			
	<						-		
	10 Drivers	The "Offset" mu	st be "0" \	when 🔤 🛛	From: 0	\$		By:	1 🗘
		selecting the"Err	or report	".	Deville				
	Boo 16	-	-		nesuits				
	Status[0]	D Data exchang	e		0				
		Error report	· · · · · · · ·		1				
	<	On-aoina reau	econiy) iest		2				
	> 10 Drivers	Variat Success cour	nter		4				
B	auild	Fail counter			5				
		Retry counter	e shot)		6				
		Command (en	able)						
		Reset counter	's						
								OK	Cancel
Yc	ou can also pre	ess "F1" in this "I	O Drivers"	window to	see details	on M	odbus N	laster Cor	nfiguration.
	Error Code	De	scription		Error Co	ode		Descrip	otion
	0	The communic	ation is O	K.	8		Data Pa	rity Error	

0	The communication is OK.	8	Data Parity Error.
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.
		-	·

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 1.1.2. Write 1. Using the sam following set MODBUS Master 	DO Data ne way in the <u>Sec</u> tings in the "MOI Request	etion 1.1 - DBUS Mas	Step 4 to creat ster Request" w	te the servindow, a	cond data blo and then click his example	ck and comp "OK".	leting all the
Request Description: Slave/Unit: MODBUS Request <3> Read Hole <4> Read Inp <5> Write sime <5> Write sime >6< Write sime	2 a a st ding Registers ut Registers cle coil bit 1 1 1 1 2 ms 250 ms 1 1	0 (on error)	OK Cancel	a. <u>S</u> E (b. <u>M</u> S c. <u>E</u> S (d. <u>C</u> T r (e. <u>T</u> V t r F I	A second	ID of the Slav D is "2"). est: rite single co by default. tion 1.1.1 to activated wh o send it timeout value t occurred, i ror code. (The value for the ice is 200 to e value is 250	ve device. il bit". change it.) nen a • details) ue. t will show ne e Modbus 1000 ms.) ms.)

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

Workspace		Name	Maha
Exception programs		Request Slave/Unit	<5> Write single coil bit 2
🛄 🗗 Main	** **	Address	1
🖶 📃 Watch (for debuggi		Nb Item	1
Soft Scope		Activation	On Call
🔜 Initial values	Tips:	Period (ms)	0
📲 😼 Binding Configuration	Press "F1" key to view the details	Period on error	0
	on the MODBUS Master settings.	Timeout (ms)	250
		Number of trials	1
E Types	8+	Description	
Double click it to open	the window.		
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Cida			sii i AQ-						De			/ 1.0	
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A G	dd two Boole ietting Starte	ean variables in th <u>d Manual</u> - Sectio	ne "Varia n 2.3.1 f	bles" wind or declarin	ow (If g varia	not fan ables).	niliar w	/ith thi	s, ref	fer the	<u>Win-</u>	GRAF	
v	ariable name	e Data type	Descri	otion									
	DO_0	BOOL	Used t	o Write dig	ital ou	itput da	ita.						
	Act_0	BOOL	In this using a	case, choo variable to	se the call i	"On ca t.	ll" way	' to wri	te da	ata thai	t mea	ans	
A	fter complet	ing the settings, t	he defin	ed variable	s shov	v as bel	ow:					المحمد والمرقب	
Vari	ables	T			31	Louis	1.1.2			Tee	Dave		X
ar <mark>s</mark>	Name	- IJ		D.V Attr	ID.	Syb.	Init val	ue Use	ar	Tag	Desc	ription	
	Act 0	BC											~
<												>	
4 >	10 Drivers V	ariables											-
<u> </u> /	"Status[0]" to	o "Status[4]", simp	oly <i>press</i>	"Del" key i	i urag to dele	Status hte "Sta	ווונט ו <i>יו</i> ה[חזי	ne syn ' and "	nboi Stati	Area, I	[4]"	SHOW	
10.0				,			tustoj	una .		5[2] 10	['] '		
	rivers *	Master	N	Jame	Value		tustoj	Na Na	me	15[2] (U	['] ·	Dim	X
	rivers* ⊡-Mog MODBUS Ġ& RTU:) Master COM2:9600.N.8.1	F	lame leguest	Value	rite single	coil bit		me ool 1	ту 1 ВО	pe DOL	Dim.	At
	rivers*) Master COM2:9600,N,8,1 2> Read Input Bits (1) [1	16]	lame lequest lave/Unit	Value <5> W	rite single	coil bit	T Na	me ool_1 ool_1	ту 1 ВО 2 ВС	pe)OL)OL	Dim.	At
10D 眉品 "目	rivers *) Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] / F 16] / S 11] / A	lame lequest lave/Unit .ddress	Value <5> W 2 1	rite single	coil bit	The second secon	me ool_1 ool_1 ool_1	ту 1 ВС 2 ВС 3 ВС	pe)OL)OL)OL	Dim.	At
日本目の	rivers *	i Master COM2:9600,N,8,1 2> Read Input Bits (1) [1. 5> Write single coil bit (2	16] F 16] S)[11] A N	lame lequest lave/Unit .ddress Ib Item	Value <5> W 2 1	rite single	coil bit	T Na	me ool_1 ool_1 ool_1 ool_1	1 BC 2 BC 3 BC 4 BC	pe)OL)OL)OL)OL	Dim.	At
	rivers *) Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] S).[11] A ∧ A	lame lequest lave/Unit .ddress Ib Item .ctivation	Value <5> W 2 1 1 0n Ca	rite single	coil bit	The second secon	me ool_1 ool_1 ool_1 ool_1 ool_1	1 BC 2 BC 3 BC 4 BC 5 BC	pe)OL)OL)OL)OL)OL	Dim.	At
	rivers *	i Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] F S J[11] A F	lame lequest lave/Unit ddress lb Item .ctivation Period (ms)	Value <5> W 2 1 0n Ca 0	rite single	coil bit	▼ Na B B B B B B	me ool_1 ool_1 ool_1 ool_1 ool_1	1 BC 2 BC 3 BC 4 BC 5 BC 6 BC	pe)OL)OL)OL)OL)OL)OL	Dim.	
	rivers*) Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] S 16] A 16] A 16] A 	lame lequest lave/Unit ddress lb Item ctivation Period (ms) Period on error	Value <5> W 2 1 0n Ca 0 0 250	rite single	coil bit	▼ Na B B B B B B B B B B B B B B B B B B B	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC	pe)OL)OL)OL)OL)OL)OL	Dim.	At
	rivers * ➡ Mo MODBUS ➡ 器 RTU:	i Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] S (11] A (11] A F F T N	lame lequest lave/Unit ddress lb Item dtress lb Item veriod (ms) 'eriod (ms) 'eriod on error imeout (ms) lumber of trials	Value <5> W 2 1 0n Ca 0 250 1	rite single	coil bit	▼ Na B B B B B C C	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	1 BC 2 BC 3 BC 4 BC 5 BC 6 BC DIN 8 BC BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	At
	rivers * □-Mo MODBUS □ A RTU: □ *= < □ *= <	i Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] S 16] A 16] A 16] A 	lame lequest lave/Unit ddress lb Item ctivation Period (ms) Period on error imeout (ms) lumber of trials Pescription	Value <5> W 2 1 0n Ca 0 250 1	rite single	coil bit	▼ Na B B B B B B C A	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC BC BC BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	At
	rivers * ➡ Mo MODBUS ➡ 器 RTU: ➡ *■ < ➡ *■ < ↓ *■ <	Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2	16] S (11) A (11) A F F T N C	lame lequest lave/Unit ddress lb Item ddress lb Item dress lot Item leriod (ms) leriod on error imeout (ms) lumber of trials lescription	Value <5> W 2 1 0n Ca 0 250 1	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 0 DIN 80 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	Att
	rivers * □Mo MODBUS □	6 Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2 5> Write single coil bit (2 Deration Error report	16] F 16] A 16] M A F F F T N C Ufffset 0	lame lequest lave/Unit ddress lb Item drivation eriod (ms) eriod on error imeout (ms) lumber of trials escription Mask Stor EFEF — — Defa	Value <5> W 2 1 0 n Ca 0 250 1 250	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC BC 8 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	
	rivers * ■ Mo MODBUS □	Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2 Operation Error report Data exchange	16] F 16] S 16] A F F T N C Offset 0 0	lame lequest lave/Unit ddress lb Item ddress lb Item ddress lb Item reriod (ms) leriod (ms) leriod on error imeout (ms) lumber of trials lescription Mask Stor EFEF — Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 3 3 3 9 4 3 3 9 4 3 3 9 4 3 3 9 4 3 3 9 4 3 9 4 3 9 4 3 9 4 9 4	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 0 DIN 8 C	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	
	rivers * I Mo MODBUS I Mo MODBUS I Mo I MO	Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2 0peration Error report Data exchange Command (one shot)	16] F 16] A 16] M A F F F T N C O 0 0	lame lequest lave/Unit ddress lb Item drivation eriod (ms) eriod on error imeout (ms) lumber of trials escription Mask Stor EFEF Defa FFFF Defa	Value <5> W 2 1 1 0 0 250 1 age cult ult	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC BC 8 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	
	rivers *	Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2 Deta exchange Command (one shot) Data exchange Error report	16] S 16] S 16] A A A F F T N C Offset 0 0 0	lame lequest lave/Unit ddress lb Item ddress lb Item veriod (ms) veriod (ms) veriod on error imeout (ms) lumber of trials vescription Mask Stor EFEF — — Defa EFFF Defa EFFF Defa	Value <5> W 2 1 1 0 0 250 1 age cult ult	/rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 0 DIN 8 C	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	
	rivers * Mo MODBUS 	Operation Error report Command (one shot) Data exchange Error report Data exchange Command (one shot) Data exchange Error report Data exchange Command (one shot) Data exchange Error report Com-going request	16] F S J(11) A F F F T N C O O O O	lame lequest lave/Unit ddress lb Item ctivation eriod (ms) eriod on error imeout (ms) lumber of trials escription Mask Stor EFEF — — Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 age cult ult	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC BC 8 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	
	rivers * Mg MODBUS B & RTU: B & "B < C & "B < Symbol Status[1] DO_0 Act_0 < IO Drivers	Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2 5> Write single coil bit (2 5> Write single coil bit (2 5> Unite single coil bit (2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	16] S 16] S 16] A A A F F T N C O O O O O O O O O O O O O	lame lequest lave/Unit ddress lb Item ddress lb Item ddress lb Item reriod (ms) reriod (ms) reriod on error imeout (ms) lumber of trials rescription Mask Stor EFEF — Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 250 1 3ge cult	/rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 9 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	
	rivers *	Operation Error report Data exchange Error report Data exchange Error report Data exchange Error report Command (one shot) Data exchange Error report Error report Error report Success counter Fail counter Retry counter Retry counter	16] F 16] A 16] A A A A A A A A	lame lequest lave/Unit ddress lb Item drivation eriod (ms) eriod on error imeout (ms) lumber of trials escription Mask Stor EFEF — — Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 3 3 3 3 3 4 3 4 3 4 3 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 5 4 5 5 4 5 5 4 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 5 7 5 5 5 6 5 5 5 5 5 5 5 5 5 5 5 5 5	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 0 DIN 8 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	
	rivers * Mg MODBUS Symbol Status[1] DO_0 Act_0 IO Drivers	Master COM2:9600,N,8,1 2> Read Input Bits (1) [1 5> Write single coil bit (2 Deta exchange Command (one shot) Data exchange Error report Data exchange Error report Error report Command (one shot) Or-going request Success counter Fail counter Retry counter Command (one shot)	16] S 16] S 16] A A A F T N C O O O O O O O O O O O O O	lame lequest lave/Unit ddress lb Item ctivation 'eriod (ms) 'eriod on error imeout (ms) lumber of trials lescription Mask Stor EFEF Defa FFFF Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 250 1 age cult	/rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 9 BC 8 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	
	rivers *	Master COM2:9600,N,8,1 Z> Read Input Bits (1) [1 S> Write single coil bit (2 Vrite single coil bit (2 Data exchange Command (one shot) Data exchange Error report Data exchange Error report (Set or On-going request Success counter Fail counter Retry counter Command (one shot) Reset counters	16] F F J[1.1] A F F T N C Offset 0 0 0	lame lequest lave/Unit ddress lb Item drivation eriod (ms) eriod on error imeout (ms) lumber of trials escription Mask Stor EFEF — — Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 250 1 age	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 0 1 0 1 8 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	
	rivers *	Master COM2:9600,N,8,1 Read Input Bits (1) [1 Write single coil bit (2 Write single coil bit (2 Write single coil bit (2 Data exchange Command (one shot) Data exchange Error report Error report Error report Error report Error report Command (one shot) Reset counter Fail counter Retry counter Command (one shot) Reset counters Slave: last error Slave: last error	16] S 16] S 16] A A F T N C Offset 0 0 0 0 0 0 0 0 0 0 0 0 0	lame lequest lave/Unit ddress lb Item ddress lb Item veriod (ms) veriod (ms) veriod on error imeout (ms) lumber of trials vescription Mask Stor FFFF Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 250 1 age cult	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 9 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	
	rivers *	Master COM2:9600,N,8,1 Nead Input Bits (1) [1 Write single coil bit (2 Write single coil bit (2 Write single coil bit (2 Data exchange Command (one shot) Data exchange Error report Error report (Set or On-going request Success counter Fail counter Retry counter Command (enable) Reset counters Slave: last error da Slave: last error tim	16] 16] 16] 	lame lequest lave/Unit ddress lb Item ctivation reriod (ms) reriod on error imeout (ms) lumber of trials rescription Mask Stor EFEF Defa FFFF Defa	Value <5> W 2 1 1 0n Ca 0 250 1 3 age cult	rite single	coil bit	Name	me ool_1 ool_1: ool_1: ool_1: ool_1: ool_1: tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 8 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	Dim.	
	rivers *	Master COM2:9600,N,8,1 Read Input Bits (1) [1 Write single coil bit (2 Write single coil bit (2 Write single coil bit (2 Command (one shot) Data exchange Command (one shot) Data exchange Error report Error report Error report Error report Command (one shot) Reset counter Fail counter Fail counter Command (one shot) Reset counters Slave: last error da Slave: last error tim Slave: last error tim	L16] S L1.1] A F F T N C O O O O O O O O O O O O O	lame lequest lave/Unit ddress lb Item ctivation 'eriod (ms) 'eriod on error imeout (ms) lumber of trials lescription Mask Stor FFFF Defa FFFF Defa FFFF Defa	Value <5> W 2 1 1 0 0 250 1 age cult ult	rite single	coil bit	Name	me ool_1 ool_1 ool_1 ool_1 ool_1 tatus O_0 ct 0	Ty 1 BC 2 BC 3 BC 4 BC 5 BC 6 BC 9 BC	pe)OL)OL)OL)OL)OL)OL)OL)OL	[04]	

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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.
- 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	In this example
Request OK Description: OK Slave/Unit: 3	 a. <u>Slave/Unit</u>: Enter the Net-ID of the Slave device. (e.g., the Net-ID is "3").
MODBUS Request	 MODBUS Request: Select "<4> Read Input Registers".
Activation Activation On call On change This option can not apply	 c. <u>Base address</u>: Start from "1" by default. (Refer the <u>Section 1.1.1</u> to change it.) <u>Nb items</u>: The number of AI signals to write. (In this case, the number is "10"). d. <u>Periodic</u>: (Refer the <u>Section 1.1.1</u>) Sending the request periodically. (In this case, to send once per second)
Misc. to the "Read" request. <u>Timeout:</u> Nb trials: 1	"on error" means the next sending time when an exception occurred (e.g., 15 seconds).

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Modbus RTU/ASCII device is 200 to 1000 ms. In this case the value is 250 ms.)

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. Next, open th	e "Variabl	es" w	indow and	l then declare	variables t	hat are avail	able	for the p	orogram.
Vorkspace		10 Dri	vers *					L.C.C.	
🔄 🗍 Test_01			MODB	US Master		Name		Value	
Exception	n programs	몲	白 • 뮮 BT	U: COM2:9600,N,	3,1	Request		<4> Read	Input Register
Programs Main Watch (for debuggi Watch (for debuggi Soft Scope Initial values Mo Binding Configuration Soft Scope		**	÷*	<2> Read Input B	its (1) [116]	Slave/Unit		3	
						Address		1	
		0	*	<4> Read Input F	10] Nb Item		10		
		FE			Activation		Periodic		
						Period (ms)		1000	
						Period on e	non	15000	
		Press "F1" key to view the details					s)	250	
🚽 😽 🚽 😽 🚽 😽	rines	on the MODBUS Master settings.					× e	1	
§g Global de 	rines		on the N	/IODBUS Mast	er settings	Number of	trials	1	

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.7	Attrib.	Syb.	Init value	User	Tag	Description
Long 1	DINT							
Word 1	WORD							
Word 2	WORD							
Word 3	WORD							
Word 4	WORD							
Word 5	WORD							
Word 6	WORD							
Real_1	REAL							
<								>

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)".

Main Manne Value Main Value Name A me Value Main Value Name Value DO BOOL Main Comparison Slave/Unit 3 Address 1 Main Status DINT Real_1 REAL Status DINT Main Oo Period (ms) 1000 Period (ms) 1000 Word_2 WORD Verd_1 WORD Period on err 15000 Word_4 Word_5 WORD Word_5 WORD Symbol Operation Offset Mask Storage Word_5 Word_6 Word_6 Word_1 Word Vord_5 Data exchange 0 FFFF Default Main Name Value Name Value FFFF Default	Mg MODBUS Master Name Value B RTU: COM2:9500,N,8,1 Request <4> Read Input Regis DO_D_BOOL Silve/Unit 3 Address 1 Name DO_D_BOOL Image: Silve/Unit 3 Address 1 Name Value Image: Silve/Unit 3 Address 1 Name Volue Image: Silve/Unit 3 Address 1 Name Volue Image: Silve/Unit 3 Address 1 Name Volue Image: Silve/Unit 3 Address 1 Name Volue Vord Image: Silve/Unit 3 No No Periodic Periodic Periodic Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Word_4 Word_5 WORD Nome Value Vord_1 More Vord_1 Word_5 Word_6 Word_5 WORD Word_6 No	Drivers *							
Brue Comment Request <4> Read Input Regis Slave/Unit 3 Address 1 Comment Slave/Unit Address 1 Comment Slave/Unit Address 1 Comment Slave/Unit Address 1 Comment Slave/Unit Address 1 Comment Nb Item Activation Periodic Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Symbol Operation Offset Mask Vord_4 Data exchange O FFFF Default 5 Word_6 Data exchange FFFF WORD (Low - High) Main Status(2) Error report 4 5 Io Drivers Variables	BrU: COM2:9600,N.8,1 Request <4> Read Input Regis Stave/Unit 3 Address 1 Address 1 Address 1 Real Input Registers (3) Nb Item Nb Item 10 Activation Periodic Period (ms) 1000 Period (ms) 1000 Period (ms) 250 Number of tri 1 Description 3 Word_4 Data exchange Word_5 Data exchange 0 FFFF Default Word_6 Data exchange 0 Data exchange 0 FFFF Default 5 1 Name Value 10 Data exchange 0 FFFF Default 5 10 Data exchange 0 FFFF Default 5 10	🖃 Modbi	JS Master		Name	Value	7 Name	🛆 Туре	Dim
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 Status[2] Error report FFFF Default 5 Yord_4 Data exchange 0 FFFF Default Yord_5 Data exchange 0 FFFF Default Yord_6 Data exchange 0 FFFF Default 5 Yord_4 Data exchange 0 FFFF Default 5 Yord_6 Data exchange 0 FFFF Default 5 Yord_8 Data exchange 0 FFFF Default 5 Yord_10 Data exchange 0 FFFF Default 5 Yord_8 Data exchange 0 FFFF Default 5 Yord_9 Yord_9 Yord_9 Yord_9 Yord_9 Yord_9 Yord_9 Yorexchange Yord_9 <	Image: Speed Input Bits (1) [1.16] Slave/Unit 3 Image: Specific Spectrum Address 1 Image: Specific Spectrum Nb Item 10 Activation Period (ms) 1000 Period (ms) 1000 Period (ms) 10000 Period (ms) 10000 Period on err 15000 Timeout (ms) 250 Word_4 Word_5 WORD Number of tri 1 Description 0 FFFF Default Word_5 Data exchange 0 FFFF Default Main Name Value Word_6 Data exchange 0 FFFF Default Name Value Status[2] Error report 0 FFFF Default 5 Value 10 Drivers/ Variables Variables 10 Drivers/ Variables 10 Drivers/ Variables 10	📄 🚠 BT	U: COM2:9600,N,8,1		Request	<4> Read Input Regis	DO O	BOOL	~
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_11 Data exchange 0 FFFF Default Yord_8 Data exchange 0 FFFF Default Yord_1 Data exchange 0 FFFF Default Yord_5 Data exchange 0 FFFF Default Yord_6 Data exchange 0 FFFF Default Name Yord_1 Data exchange 0 FFFF Default Name Yord_5 Data exchange 0 FFFF Default Name Yord_6 Data exchange 0 FFFF Default Name Yalue Yord_1 Data exchange 0 FFFF Default Yalue Yalue Yord_6 Data exchange 0 FFFF Default Yalue Yalue Yord_1 </td <td>Image: Solution of the status 1 Image: Solution of the status 1 I</td> <td>Ē*₿</td> <td><2> Read Input Bits (1)</td> <td>[116]</td> <td>Slave/Unit</td> <td>3</td> <td>Long_</td> <td>I DINT</td> <td></td>	Image: Solution of the status 1 Image: Solution of the status 1 I	Ē * ₿	<2> Read Input Bits (1)	[116]	Slave/Unit	3	Long_	I DINT	
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_11 Data exchange 0 FFFF Default Status[2] Error report 0 FFFF Default IO Drivers Variables 0 FFFF Default	Image: Status Input Registers (3) Nb Item 10 Activation Periodic Periodic Period (ms) 1000 Period on err 15000 Vord_1 WORD Word_2 WORD Word_3 WORD Word_3 WORD Vord_4 Description 3 Word_5 WORD Vord_5 Data exchange 0 FFFF Default Main Vord_6 Data exchange 0 FFFF Default Main Vord_6 Data exchange 0 FFFF Default Main Vord_1 Data exchange 0 FFFF Default Main Vord_6 Data exchange 0 FFFF Default Main Vord_1 Data exchange 0 FFFF Default Main Vord_1 Data exchange 0 FFFF Default Main Iong_1 Data exchange 0 FFFF Default Main Vord_2 Iong_1 Data exchange FFFF Default Main	Ē*	<5> Write single coil bit	(2) [1]	Address	1	Real_1	REAL	
Activation Periodic Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_4 Data exchange 0 Vord_5 Data exchange 0 Vord_6 Data exchange 0 Data exchange 0 FFFF Default Word_6 Data exchange Data exchange 0 FFFF Default Name Value	Activation Periodic Period (ms) 1000 Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_4 Data exchange 0 FFFF Default Main Word_5 Data exchange 0 FFFF Default Main Name Value	Ė * ∎	<4> Read Input Registe	rs (3) ['	Nb Item	10	Status	DINT	[[
Period (ms) 1000 Period on er 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_4 WORD Word_5 WORD Word_6 Data exchange 0 Symbol Operation Offset Word_5 Data exchange 0 FFFF Default Main Word_6 Data exchange 0 Long_1 Data exchange 0 9 FFFF Default 5 10 Drivers Variables	Period (ms) 1000 Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Symbol Operation Offset Mask Symbol Operation Offset Mask Symbol Operation Offset Mask Symbol Operation Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0 FFFF Default Long_1 Data exchange 0 FFFF Default Status[2] Error report 10 Drivers				Activation	Periodic	Word_	1 WORD	
Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_4 Data exchange Word_5 Data exchange Word_6 Data exchange Long_1 Data exchange News FFFF Default 5 WORD WORD Name Value	Period on err 15000 Timeout (ms) 250 Number of tri 1 Description 3 Word_4 WORD Word_5 WORD Word_4 Data exchange 0 FFFF Default Main Word_6 Data exchange 0 FFFF Default Main Word_6 Data exchange 0 FFFF Default Name Value Value				Period (ms)	1000	Word_	2 WORD	
Timeout (ms) 250 Word 4 WORD Number of tri 1 0 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 Long_1 Data exchange 0 FFFF DWORD (Low - High) Status[2] Error report 0 FFFF Default 10 Drivers Variables 10	Timeout (ms) 250 Word 4 WORD Number of tri 1 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 Long 1 Data exchange 0 FFFF DWORD (Low - High) Real 1 Data exchange 0 FFFF Default Status[2] Error report 0 FFFF Default 10 Drivers Variables				Period on err	15000	Word_	3 WORD	
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 Long_1 Data exchange 0 FFFF Default Status[2] Error report FFFF Default 5 IO Drivers Variables 4 5	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 Long_1 Data exchange 0 FFFF Default Real 1 Data exchange 0 FFFF Default Status[2] Error report 0 FFFF Default IO Drivers/ Variables 4 5 10	2			Timeout (ms)	250	Word_	4 WORD	
Description 3 Word 6 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 Word_6 Data exchange 0 FFFF Default Long_1 Data exchange 0 FFFF DWORD (Low - High) Real 1 Data exchange 0 FFFF Default Status[2] Error report 0 FFFF Default IO Drivers Variables 10 Drivers Variables	Description 3 Word 5 WORD Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0				Number of tri	1	Word_	5 WORD	
Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0 FEFF- Default Word_6 Data exchange 0 FFFF Default Long_1 Data exchange 0 FFFF DWORD (Low - High) Real_1 Data exchange 0 FFFF Default Status[2] Error report 1 FFFF Default 10 Drivers Variables	Symbol Operation Offset Mask Storage Word_4 Data exchange 0 FFFF Default Word_5 Data exchange 0				Description	3	Word	6 WORD	_
Symbol Operation Onset 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 Status[2] Error report FFFF Default 5 IO Drivers Variables Variables	Syntable Operation Onset 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 Status[2] Error report 0 FFFF Default IO Drivers Variables 0 FFFF	Sumbol	Operation	06	at Mark 9	torage		ETAIN variables	1
Word_1 Data exchange 0	Word_5 Data exchange 0	Word 4	Data exchange	0	FFFF D	efault	D N	lain	~
Word_5 Data exchange 0 FFFF Default 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 Intervision 0 FFFF Default Image: Constraint of the second se	Word_6 Data exchange 0 FFFF Default Long_1 Data exchange 0 FFFF DWORD (Low - High) Real_1 Data exchange 0 FFFF Default Status[2] Error report 0 FFFF Default IO Drivers Variables 0 FFFF	Word 5	Data exchange	0	FFEF D	efault	<		2
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 5 10 Drivers Variables	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 5 10 Drivers Variables	Word 6	Data exchange	ា	FEEE D	efault	Name	Value	
Real_1 Data exchange 0 FFFF DWORD [Low - High] Status[2] Error report 0 FFFF Default ID Drivers Variables	Real_1 Data exchange 0 FFFF DW/ORD (Low - High) Status[2] Error report 0 FFFF Default Image: Comparison of the status o	Long 1	Data exchange	0	FEFE D	W/DBD (Low - High)			
Status[2] Error report 4 FFF Default 5	Status[2] Error report ID Drivers Variables	Beal 1	Data exchange	n	FEEE D	w/OBD (Low - High)			
ID Drivers Variables	10 Drivers Variables	Statue[2]	Error report	Ň	FFFF D				
10 Drivers Variables	10 Drivers Variables	C C C C C C C C C C C C C C C C C C C	Linor report		1111 0	5			
		10 Drivers	Voriphlar				11		
		10 Drivers	Variables						
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6. As the figure Offset value	below, select (From: 0 ; By: 1) Operation Data excha Data excha Data excha Data excha Data excha Data excha Data excha	the "Word). nge 0 nge 0 nge 0 nge 0	1" to "Word_ set Mask Stor FFEE Defa FI Name FI From: FI From: Results 0 1 2 3 4 5 6	_6" and t	hen click "Iter	By: 1	" to set their
 7. Next, double then press "E <u>Note:</u> One is "6" 	click the Offset Enter" key to cor 32-bit data requ ' and the next O Symbol Word_4 Word_5 Word_6 Long_1 Real_1 Status[2]	field of "Lo mplete the ires two N ffset value Operation Data exchar Data exchar Data exchar Data exchar Data exchar Data exchar Error report	ong_1" and "Resettings. lodbus address must be set to offset Mage 3 F age 4 F age 5 F age 6 F age 8 1 F age 9 P	eal_1" ite ses. For in o "8" (i.e. Mask St FFF De FFF De FFF De FFF De FFF De FFF De FFF De FFF De	ems and set the nstance, the C , "Real_1"). fault fault fault VORD (Low - High VORD (Low - High	OK R C	Cancel
4	> 10 Drivers	ariables		iess ent	ег кеу.	2	

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 1.1.4. Write A 1. Using the sam following sett MODBUS Master Request Description: Slave/Unit: MODBUS Request <4> Read Inp <5> Write sime <6 Write sime <1 E> Write ca Data block C Base address: Nb items: Activation Periodic: On call On change Misc. Timeout: Nb trials: 	AO Data (16-bit) ne way in the Sections in the "MO Request Request 3 at ut Registers gle coil bit al Dite 1 250 ms 1 ms e "Variables" w) ection 1.1 - DBUS Mass	- Step 4 to crea ster Request" v	te the 4 vindow, a. <u>9</u> (b. <u>N</u> (b. <u>N</u> (c. <u>E</u> (d. <u>0</u> r e. <u>T</u> V t r F t	th data block a and then click <u>nis example</u> <u>lave/Unit</u> : inter the Net-II e.g., the Net-II <u>AODBUS Requi</u> <6> Write sing ase address: tart from "1" k Refer the <u>Secti</u> <u>Dn change</u> : Ir neans that the each time any w Refer the <u>Secti</u> <u>imeout</u> : Set a t Vhen time-out he defined err ecommended tTU/ASCII device his case the val	D of the Slav O of the Slav D is "3"). est: Select gle holding re by default. ion 1.1.1 to of request is a variable char ion 1.1.1 for imeout valu coccurred, it or code. (Th value for the ce is 200 to 3 lue is 250 m	ng all the ng all the e device. egister". change it.) rite request, ctivated nged. derails.) e. will show e Modbus 1000 ms. In s.)
F							
Workspace	IO Dri	vers* Mon MODBI	IS Master		Name	Value	

Exception programs		Name	Value
Exception programs	🚊 由 🚠 RTU: COM2:9600,N,8,1	Request	<6> Write single holding .
📄 🛄 Programs	*=	Slave/Unit	3
🛄 📴 Main		Address	1
🖨 🔁 Watch (for debuggi 🕰 Soft Scope	** (4) Read Input Registers (3) [110]	Nb Item	1
	📊 😽 🚽 🕞 🖓 🕞 🕞 🖓 🕞 🕞 🖓 🕞	Activation	On Change
🔜 🔜 Initial values		Period (ms)	0
🔚 🚮 Binding Configuration		Period on error	0
🚽 😽 🚽 Global defines		Timeout (ms)	250
🔤 🚮 Variables	Press "F1" key to view the details	Number of trials	1
E Types	on the MODBUS Master settings.	Description	
Variables Types Double-click it to open	Press "F1" key to view the details on the MODBUS Master settings.	Number of trials Description	1

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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:

٧	ariables								
T	Name	Туре	D. 🔨	Attrib.	Syb.	Init value	User	Tag	Description
	Word_Write_1	WORD		1					
	<								>

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 *										H	×Ν
圓	E Ma MODBUS	6 Master			Name	Value		T	Name	V	Туре	
묘	🖮 🚜 RTU:	: COM2:9600,N,8,1		F	Request	<6> Write single holdi			📃 🚮 Global variables		bles	~
1+	Ė * ∎ <	2> Read Input Bits (1)	[116]	3	Slave/Unit	3			Word_Writ	e_1	WORD	
E	॑		1	Address	1			Word_6	•	WORD		
0		4> Read Input Regist	ers (3) [110]	1	Nb Item	1	1		Word_5		WORD	
ET:	±	6> Write single holding	g register (3) [1	1] /	Activation	On Change			Word 4		WORD	
				F	Period (ms)	0			Word 3		WORD	
				F	Period on err	0			Word 2		WORD	
ď,5				Ĩ	Timeout (ms)	250			Word 1		WORD	_
				1	Number of tri	1			Status		DINT	
∎+				I	Description		11	1	Deal 1		HEAT	×
								-	<			2
	Symbol	Operation	Offset 1	Mask	Storage		Range (Lc	N	ame	Valu	le	
	Word_Write_1	Data exchange	- 0 F	FFF	Default							
	Status[3]	Error report	0 F	FFF	Default							
			_	1			100					
		Charles /		!.			1					
5 7	IU Drivers	variables										
				- C-	Ital Taab							
			ICP DA:	S CO.	, Lta. Tech		ument					

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Author 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 <16> Write H	Janice Hong AO Data (32-bit) ne way in the Sec ings in the "MOI Request 4 a st gle holding register oil Bits olding Registers	Version	1.0.0 • Step 4 to crea ster Request" v	Date te the 5 window, a. b. c.	Dec. 2015 th data block a and then click this example <u>Slave/Unit</u> : Enter the Net (e.g., the Net- <u>MODBUS Reg</u> Select "<16> V <u>Base address</u> : Start from "1' (Refer the <u>Sec</u> <u>Nb items</u> :	Page and complet "OK". -ID of the SI -ID is "4"). <u>uest</u> : Write Holdin " by default. ction 1.1.1 to	15 / 16 ing all the ave device. ng Registers".
Activation Periodic: On call On change Misc. Pimeout: Nb trials:	0 ms 250 ms 1	0 (on error)		d.	(In this case, the Fourtheast the Fourtheast the Fourtheast the Fourtheast the Fourtheast the Fourtheast that the fourtheast that the fourtheast the Fourthe	the number REAL type re ess). a case of a w ne request is y variable ch	is "2" quires two rite request, activated anged. 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	IO Drivers *		
🖃 👘 Test_01	📙 🖃 Mo MODBUS Master	Name	Value
🗄 🔚 🛄 Exception programs	「点 品、RTU: COM2:9600,N,8,1	Request	<16> Write Holding R
📩 🦳 Programs	***	Slave/Unit	4
🛄 🔟 Main		Address	1
🛓 🛁 Watch (for debuggi	***	Nb Item	2
Soft Scope	💼 📲 <6> Write single holding register (3) [11]	Activation	On Change
📰 Initial values	************************************	Period (ms)	0
		Period on error	0
Global defines ✓☆ Variables ► Types	Press "F1" key to view the details on th	e MODBUS N	Aaster settings.
Double-click it to open t	his window.		
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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:

Va	riables								🖬 🛛 🗙
T	Name	Туре	D.5	Attrib.	Syb.	Init value	User	Tag	Description
	Real_Write_1	REAL							
	<)				>
4	IO Drivers Variables								

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)".

		191		7 11	
	Name	Value		Y Name	Туре
— 品 RTU: COM2:9600,N,8,1	Request	<16> Write Hol	ding R	Bool_15	BOOL
*= *1 <2> Read Input Bits (1) [116]	Slave/Unit	4		Bool_16	BOOL
Image: Bearing and Some state and the state of the st	Address	1		DO_0	BOOL
🗢 👜 📲 <4> Read Input Registers (3) [110]	Nb Item	2		Long_1	DINT
📻 👘 👘 🗄 👘 🚼 👘 👘 👘 👘 👘 👘	1 Activation	On Change		Real 1	REAL
💼 📲 <16> Write Holding Registers (4) [12]	Period (ms)	0		Real Write	e 1 REAL
	Period on err	0		Status	DINT
e 5	Timeout (ms)	250		Word 1	WORD
	Number of tri	1		Word 2	WORD
∎ +	Description	-	-	10/	
				<	2
Symbol / Operation Offset Ma	ask Storage		Range (Lc	Name	Value
Real_Write_1 🛨 Data exchange 0 FFF	F DWORD (L	ow - High)			
Status[4] Error report 0 FFF	F Default				
<u> </u>			>		
IO Drivers Variables					
	Co. Itd. Tech	nical Docur	nont		