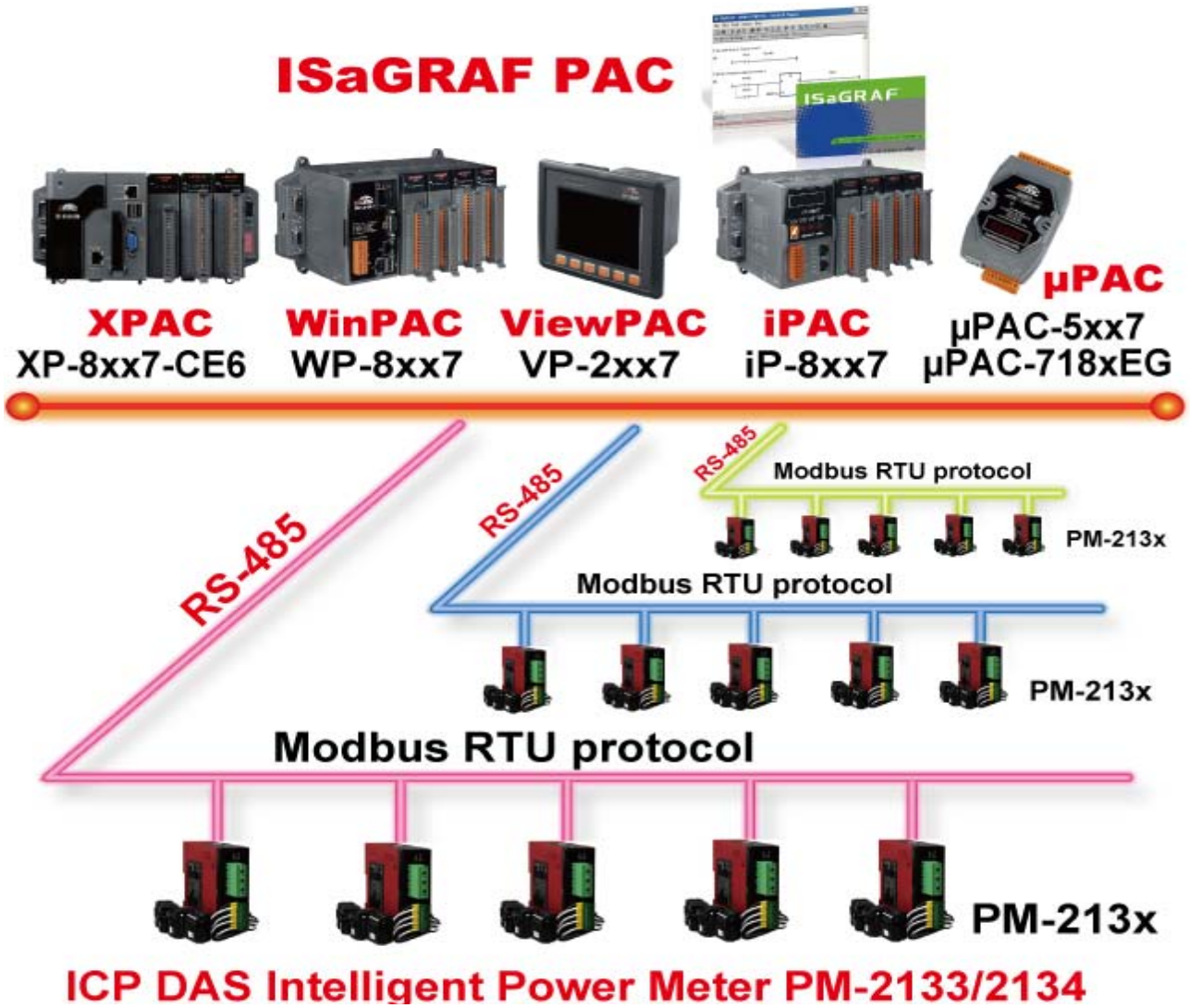
How To Connect The ICP DAS Power Meter – PM-2133 and PM-2134 By The ISaGRAF PAC ?

The ISaGRAF PAC supports the Modbus RTU Master protocol to connect the ICP DAS power meter - PM-2133 series and PM-2134 series. Please use RS-485 ports to connect the PM-213x power meters. One ISaGRAF PAC can use one RS-485 port to connect some PM-213x power meters (Recommend connecting no more than 30 power meters for one RS-485 port. For connecting many power meters, user may divide them to be connectted by two or more RS-485 ports to make the scan time of those power meters shorter).

Please must follow the correct ways and safety rules listed in the user's manual of the PM-213x series power meter to install it . User can refer to http://www.icpdas.com/en/product/guide+Energy__Management+Power__Meter+Single-phase__Smart__Power__Meter#487 for more information or email question to service@icpdas.com

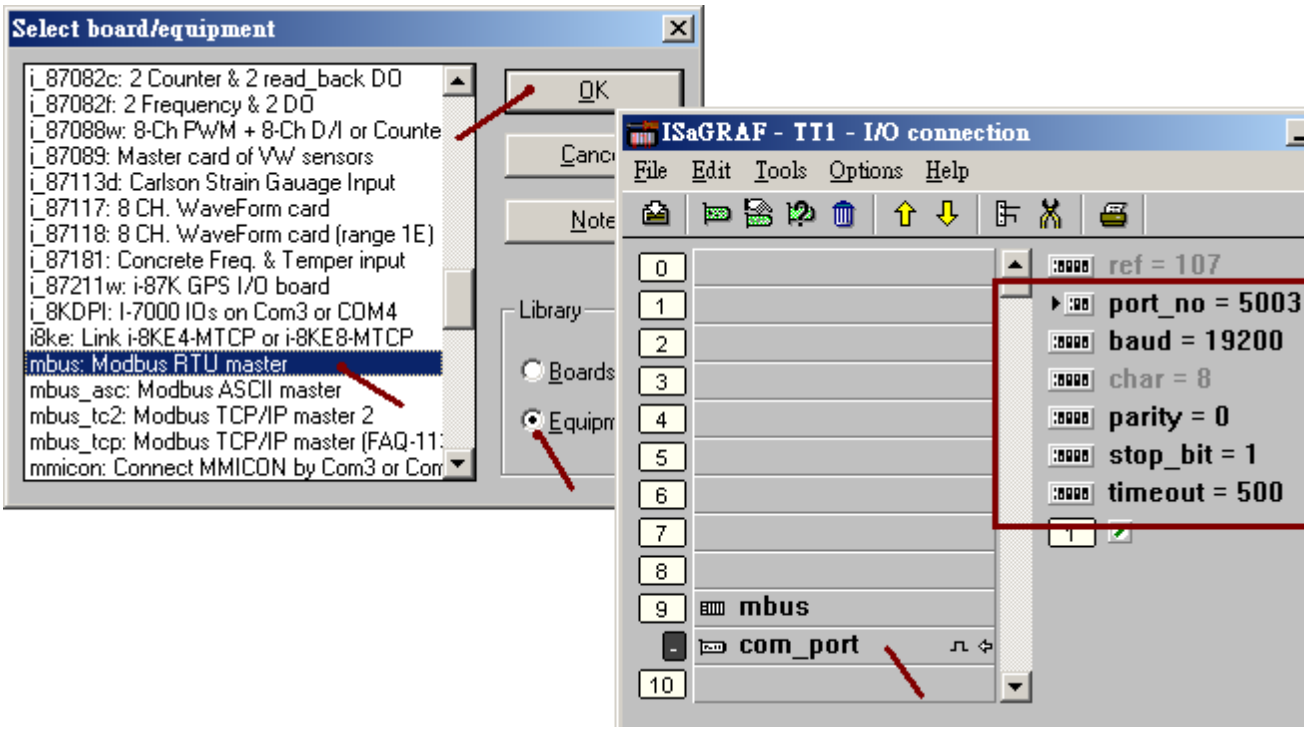


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The default NET-ID (address) setting of the PM-213x series is 1. The default communication parameter of the Modbus RTU port of the PM-213x series is “19200, 8, None, 1”. Please apply the correct setting when connecting them (It may be modified by users).

How to program ? First connecting the “Mbus” in the ISaGRAF I/O connection window. You may refer to the Chapter 8 of the ISaGRAF User's manual for more information about the Modbus RTU / ASCII Master functions
(http://www.icpdas.com/en/download/show.php?num=333&nation=US&kind1=&model=&kw=isagraf) or refer to the FAQ-047 , FAQ-096 or FAQ-101
(https://www.icpdas.com/en/faq/index.php?kind=280#751)

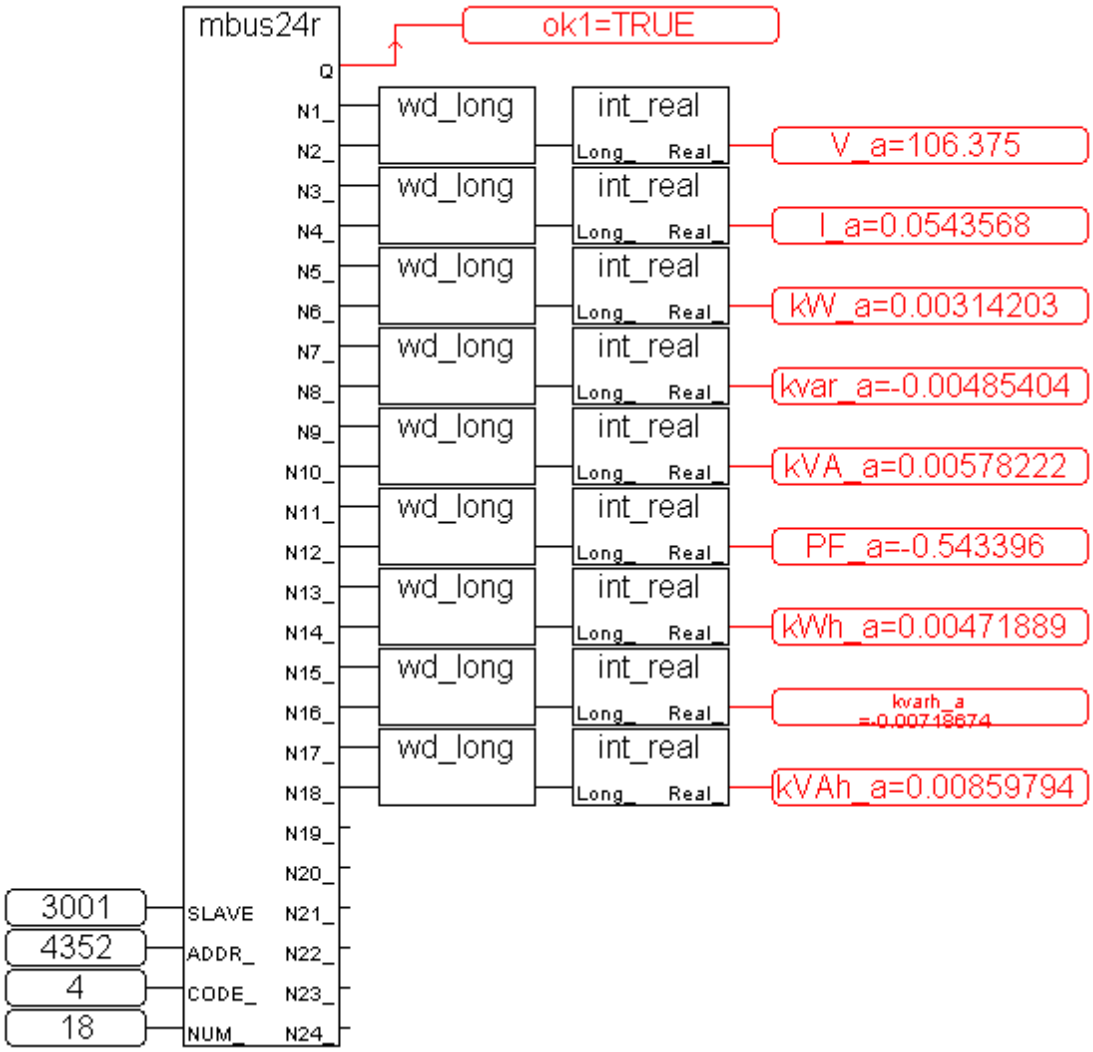
The “port_no” setting of the following figure means the COM port number is 3 (5003 mod 100 = 3) and the “Delay time for sending one Modbus request” is 50 ms (5003/100 = 50), that is 0.05 seconds.Some Modbus RTU slave device can not accept frequent polling, then set bigger “Delay-time” value for those devices. Recommend to set the “Delay-Time” larger than 30 ms for connecting the PM-213x series power meter.



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Then writting a function block program similar as the following figure to get the data from the PM-213x power meter. The following figure is using one “Mbus24r” function block to read 18 words starting from the data address 4352 by Modbus function call 4. The “SLAVE” setting 3001 means using COM3 to request the device (the power meter) which has NET-ID equal to 1. Please muste declare the ISaGRAF variables - V_a , I_a , kW_a , kvar_a , kVA_a , PF_a , kWh_a , kvarh_a , kVAh_a as “REAL” type (float).

Note: The XP-8xx7-CE6, WP-8xx7, VP-2xW7, iP-8xx7 and uPAC-7186EG supports the “Mbus24r”, however the i-8xx7, 7188EG/XG and i-8x37-80 doesn't. Please use two “Mbus_r” to request them for the i-8xx7, 7188EG/XG and i-8x37-80 controller.



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The following table is originally listed in the user's manual of the PM-213x series product. It is for reference only here.

Please use the last four digits value of the “Modicom Format – 1” in the “ADDR_” parameter of the ISaGRAF “Mbus_xxx” function blocks. For example, for the Modicom Format value 34353, please use the value 4352 in the “Mbus24r” 's “ADDR_” parameter.

Modbus Module #2 Input Register : Voltage, Current, Power, Energy(Float) for PM-2133、PM-2134

Parameter name	Modbus Register		Len	Data Type	Range	Units	Comment
	Modicom Format	Hex					
V_a	34353- 34354	0x1100-0x1101	DWord	Float		Volt	Primary
I_a	34355- 34356	0x1102-0x1103	DWord	Float		Amp	Primary
kW_a	34357- 34358	0x1104-0x1105	DWord	Float		kW	Primary
kvar_a	34359- 34360	0x1106-0x1107	DWord	Float		kvar	Primary
kVA_a	34361- 34362	0x1108-0x1109	DWord	Float		kVA	Primary
PF_a	34363- 34364	0x110A-0x110B	DWord	Float			Primary
kWh_a	34365- 34366	0x110C-0x110D	DWord	Float			Primary
kvarh_a	34367- 34368	0x110E-0x110F	DWord	Float			Primary
kVAh_a	34369- 34370	0x1110-0x1111	DWord	Float			Primary
V_b	34371- 34372	0x1112-0x1113	DWord	Float		Volt	Primary
I_b	34373- 34374	0x1114-0x1115	DWord	Float		Amp	Primary
kW_b	34375- 34376	0x1116-0x1117	DWord	Float		kW	Primary
kvar_b	34377- 34378	0x1118-0x1119	DWord	Float		kvar	
kVA_b	34379- 34380	0x111A-0x111B	DWord	Float		kVA	Primary
PF_b	34381- 34382	0x111C-0x111D	DWord	Float			Primary
kWh_b	34383- 34384	0x111E-0x111F	DWord	Float			Primary
kvarh_b	34385- 34386	0x1120-	DWord	Float			Primary

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		0x1121					
kVAh_b	34387- 34388	0x1122-0x1123	DWord	Float			Primary
V_c	34389- 34390	0x1124-0x1125	Dword	Float		Volt	Primary
I_c	34391- 34392	0x1126-0x1127	Dword	Float		Amp	Primary
kW_c	34393- 34394	0x1128-0x1129	Dword	Float		kW	Primary
kvar_c	34395- 34396	0x112A-0x112B	Dword	Float		kvar	Primary
kVA_c	34397- 34398	0x112C-0x112D	Dword	Float		kVA	Primary
PF_c	34399- 34400	0x112E-0x112F	Dword	Float			Primary
kWh_c	34401- 34402	0x1130-0x1131	Dword	Float			Primary
kvarh_c	34403- 34404	0x1132-0x1133	Dword	Float			
kVAh_c	34405- 34406	0x1134-0x1135					
V_avg(V_d)	34407- 34408	0x1136-0x1137	Dword	Float		Volt	Primary
I_avg(I_d)	34409- 34410	0x1138-0x1139	Dword	Float		Amp	Primary
kW_tot(kW_d)	34411- 34412	0x113A-0x113B	Dword	Float		kW	Primary
kvar_tot(kvar_d)	34413- 34414	0x113C-0x113D	Dword	Float		kvar	Primary
kVA_tot(kVA_d)	34415- 34416	0x113E-0x113F	Dword	Float		kVA	Primary
PF_tot(PF_d)	34417- 34418	0x1140-0x1141	Dword	Float			Primary
kWh_tot(kWh_d)	34419- 34420	0x1142-0x1143	Dword	Float			Primary
kvarh_tot(kvarh_d)	34421- 34422	0x1144-0x1145	Dword	Float			
kVAh_tot(kVAh_d)	34423- 34424	0x1146-0x1147	Dword	Float			

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