# Chapter 17 Schedule Control



# SCHEDULE CONTROL

#### Introduction:

All Win-GRAF WinCE series PAC support the Schedule-Control function. One PAC can control max. 10 Targets (devices) with specified schedule configurations. Each schedule Target (device) contains three variables to be controlled – one BOOL variable, one DINT variable and one REAL variable. ICP DAS provides a free software – "Schedule-Control Utility". User can use this software to edit /modify the schedule configurations easily in PC or in PAC.

#### Driver version of Win-GRAF PAC:

The Win-GRAF PAC supports Schedule-Control in the below driver version and the new version.

WinCE PAC	Win-GRAF PAC	Driver Version
ViewPAC	VP-x2x8-CE7	1.02
WP-8000	WP-8148, WP-8448, WP-8848	1.02
WP-8000-CE7	WP-8128-CE7, WP-8428-CE7, WP-8828-CE7	1.01
WP-5000	WP-5238-CE7	1.01
XP-8000-CE6	XP-8048-CE6, XP-8348-CE6, XP-8748-CE6	1.01

You may download newer Win-GRAF driver at

http://www.icpdas.com/root/product/solutions/softplc\_based\_on\_pac/win-graf/download/win-graf-driver.html

# 17.1 Install the Schedule-Control Utility and Restore the Win-GRAF Demo Project

There is one Win-GRAF-PAC-CD in the Win-GRAF PAC package box. The Schedule-Control Utility file name is "**Schedule\_in\_PC.exe**" in the "CD:\napdos\Win-GRAF\Tools\_Utility\" path.

Please copy this Schedule-Control Utility (Schedule\_in\_PC.exe and label\_name.txt) to your PC. Recommend to copy it to the directory of your Win-GRAF project. For instance, copy it to "D:\Schedule-Control\**Station1**\Schedule\_in\_PC.exe", then run this "Schedule\_in\_PC.exe" file.

Schedule-Control Utility				
New	Open	from PC Get from Controller	Help-about	
	<u></u>			
🧧 Schedule-Control Utility	Area Sant, South & State of State	X.		
Save to PC Send to Controller	Controller time synchronization Open from PC	Get from Controller Help-about		
Title : Title				
Target 1	Target 2	Target 3		
				X
	Schedule-Control Utility Target 1 > Season Alwa	ays > Normal day		
	Back Save to PC	Boolean	Integer Real	
Target 4	☑ Target 1	Default Value OFF 👻 0	0.0	
_				
Target 7				
	Season Always	\$	Always	
				٦
	Season Always * Season 1	Season 2 *	Season 3 Season 4	
	Normal day		CoheJule 1 *	
	<ul> <li>Normal day (Schedule 1 *)</li> </ul>	Schedule 1 * 👻	Schedule 2	
	Sunday			
	Holiday 1     Monday	,	Schedule 3	
	<ul> <li>Holiday 2</li> <li>Wedness</li> </ul>	dav		
	<ul> <li>Special day</li> <li>Thursday</li> </ul>	N .	Schedule 4	
	V Friday			
	Saturda;	ý	Schedule 5	
	(II			

Then we will see the following windows (Click New > Target 1).

There is one another Schedule-control utility, however it is set up on the **PAC** (not on the PC). It is "**Schedule\_in\_PAC.exe**". You can find it in the "\System\_Disk\Win-GRAF\" path of the Win-GRAF PAC.

#### Restore Win-GRAF demo project :

The Win-GRAF demo project for the Schedule-Control is "demo\_schedule.zip". It is in the "\napdos\Win-GRAF\demo-project\" path of the Win-GRAF-PAC-CD. Restore it to the PC / Win-GRAF workbench by the following way.



# 17.2 Introduction of the "demo\_schedule" Project

This "demo\_schedule" project shows the way to do schedule-control. Please prepare one Win-GRAF PAC (like VP-x238-CE7 or WP-8x48). One PAC can control schedules of max. 10 Targets (Target 1 to Target 10). Each Target contains one BOOL, one DINT and one REAL variable.

### Settings in the "I/O boards" window :

To enable schedule-control in the Win-GRAF PAC, first click the "Open I/Os" to add one "Schedule" (add it in the slot number 8 or bigger number). There is a "Password" parameter in its "Properties" window. The "Password" is for the "Schedule-Control Utility" running in PC to identify the authorization when connecting the Win-GRAF PAC. It is set as 0 in this demo project. After adding the "Schedule" in the "I/O boards", we can find 10 BOOL input channels in the "variables" window. These 10 channels return the state of the schedule-control of the Target 1 to 10. TRUE means the Target has the schedule-control utility". FALSE means not enabled.



#### Variable declaration:

Click the "Variables" to view all variables in this demo project.

₩a ₩in-GRAF - demo_schedule							
<u>File Edit View</u> Insert Project <u>T</u> ools <u>W</u>	indow <u>H</u> elp						
27 🖬 🕑 🛃 🐇 🖬 🛍 🗙 👒	😓   🤊 🕑   🏭   🏭 🏪 😘 🎙	🖸 🚰 📕 👧 📴 🎽 🗿					
Workspace Variables							
🖃 👘 🗐 demo_schedule	🝸 Name	Type Dim. At					
Exception programs	🗆 🖂 Global variables						
🖻 🗝 Programs	Target_01_BOOL	BOOL					
📲 Main	Target_02_BOOL	BOOL					
🖃 🔤 Watch (for debugging)	Target_03_BOOL	BOOL					
Soft Scope	Target_04_BOOL	BOOL					
Initial values	Target_05_BOOL	BOOL					
Sal NewSpy1	Target_06_BOOL	BOOL					
Binding Configuration	Target_07_BOOL	BOOL					
\iint 🖇 🖁 🖓 🖓 🖓 🖓	Target_08_BOOL	BOOL					
📸 Variables 🔪	Target_09_BOOL	BOOL					
E Types	Target_10_BOOL	BOOL					
	Target_01_DINT	DINT					
	Target_02_DINT	DINT					
	Target_03_DINT	DINT					
	Target_04_DINT	DINT					
	Target_05_DINT	DINT					
	Target_06_DINT	DINT					
	Target_07_DINT	DINT					
	Target_08_DINT	DINT					
	Target_09_DINT	DINT					
	Target_10_DINT	DINT					
	Target_01_REAL	REAL					
	Target_02_REAL	REAL					

The above variables - "Target\_01\_BOOL ~ Target\_10\_BOOL", "Target\_01\_DINT ~ Target\_10\_DINT" and "Target\_01\_REAL ~ Target\_10\_REAL" - will be controlled by the Win-GRAF PAC. They represent these variables belong to the 10 Targets.

Data Binding

Refer to <u>Chapter 7</u> for more details about the Data Binding. If the user wants to open variables of this Win-GRAF PAC for other PACs to read data, these variables that described as above should be dragged into the "Public" area of the "Binding" window, and then assign a ID for them. To be controlled correctly by the Schedule-Control configurations, the "Identifier" number **Must be** set from 5001 to 5030. After that, the system will deal with the schedule controls for ten targets according to the settings in the Schedule-Control Utility.



## <u>Note:</u> If the user want to publish Win-GRAF variables to allow the eLogger HMI to get data. Refer to <u>Section 3.1 To Enable the Win-GRAF PAC as a Modbus TCP Slave</u> for more details.

# 17.3 Edit Schedule Configurations by the Schedule-Control Utility

Here shows a simple example to use the Schedule-Control Utility, refer to Section 17.5 for details.

1. Execute the Schedule-Control Utility (Schedule\_in\_PC.exe) in the PC.

(Click "New" and click "Target 1" to open the Schedule setting window for the "Target 1").

	Schedule-Control Utility			~~
🔜 Schedule-Control Utility	Save to PC Send to Controller	Controller time synchronization Open from	a PC Get from Controller Help	p-about
New	Thúe: Trúle	) []		)
	Target 1	Target 2	Target 3	
	Target 4	Target 5	Target 6	
	Target 7	Target 8	Target 9	
<ol> <li>Enable/Set the Season and Schedule Date.</li> <li>(1) Check "Target 1 " box to enable and set the Target 1.</li> </ol>		Target 10		

- (2) Click "Season Always".
- (3) Check "Season Always" box to enable it.
- (4) Click "Normal Day" item (Normal day is usually used for Monday ~ Friday.)
- (5) Check "Normal Day" box to enable it and then set proper settings (e.g. Monday ~ Friday).
- (6) Click "Schedule 1" to set the schedule period for the "Schedule 1".

💀 Schedule-Control Utility	Target 1 > Season Always >	Normal day	-	_	-	
Back Save to PC	✓ Target 1	Default Value	Boolean OFF 👻	Integer 0	Real 0.0	
The "*" means that						
the item is enabled.	Season Always			Alw	ays	
Season Always *	Season 1	Sea	ison 2	Season 2	3	Season 4
	Normal day	1-1-1			Schedule 1	6
<ul> <li>Normal day (Schedule 1 !!!)</li> <li>Holiday 1</li> </ul>	Appry Scher     Sunday     Monday	tule 1 🗸			Schedule 2	
◎ Holiday 2	🐷acy 💟 Tuesday 💟 Wednesday				Schedule 3	
Special day	📝 Thursday 📝 Friday				Schedule 4	
	📄 Saturday				Schedule 5	

### 3. Set the Schedule Period

After selecting "Schedule 1" in the step2 – (6), do the following steps.

(1) Check "01" to enable the setting for the No. 01 Time Period of the Schedule 1.

- (A) Set up the time as the figure below, or the time which easily for testing.
- (B) Set up the Boolean, Integer, Real variables to the values that you want to control, or follow the setting in the figure below.
- (2) Check "02" to enable the setting for the No. 02 Time Period, such as the step (1).

Each schedule can set up a max. of 15 Time Periods.

After completing the settings, click "Save and exit" to save and exit this window.

Schedule 1	1														
									Сору	rom					
	Ho	ur	Minu	ute	То	Ho	or	Min	ute	] [	Boole	an	Integer	Real	
<b>V</b> 01:	8	-	30	-		12	•	0	-		ON	•	10	12.34	
<b>V</b> 02:	13	•	0	•		17	•	30	-		ON	•	20	25.67	
03:	0	- T	0	- T		0	- T	0	- T		OFF	-	0	0	
04:	0	I	0	-		0	-	0	I		OFF	-	0	0	
05:	0	-	0			0		0	- T		OFF	-	0	0	
06:	0	-	0	- T		0	- T	0			OFF	-	0	0	
07:	0	-	0	-		0	- T	0	-		OFF	-	0	0	
08:	0	-	0	-		0	- T	0	-		OFF	-	0	0	
09:	0	-	0	-		0	- T	0	-		OFF	-	0	0	
<b>1</b> 0:	0	-	0	-		0		0	-		OFF	-	0	0	
<b>11</b> :	0	-	0	-		0		0	-		OFF	-	0	0	
12:	0	-	0	-		0	-	0			OFF	-	0	0	
13:	0	-	0	l v		0	-	0	T.		OFF	-	0	0	
14:	0	-	0	l vi		0	-	0	T.		OFF	-	0	0	
15:	0	T.	0	-		0	I	0	T T		OFF	Ŧ	0	0	
Save a	and exit													Cancel	

4. Then, it will go back to the previous setting window as the figure below. And, the "\*" symbol show on the screen means the season or schedule has been configured.



5. "Default Value" (in the upper right) is for the default setting. If the current date is not found in any Schedule setting or the date is found, however, its time period is not found in the related Schedule 1 ~ 5, the Target device will be controlled follow the "Default Value". The "Default Value" in this demo project is "Boolean: OFF, Integer: 0, Real: 0.0".

#### Advantage of the Default Value:

Utilizing the "Default Value" can reduce the amount of the Periods setting in the Schedule 1 ~ 5.

Ex: The following example sets 5 Periods in the Schedule 1.

- (1)  $00:00 \sim 08:00$  OFF 0 0.0
- (2) 08:00~09:50 ON 0 0.0
- (3) 09:50  $^{\sim}$  10:00 OFF 0 0.0
- (4) 10:00 ~ 11:50 ON 0 0.0
- (5) 11:50 ~ 24:00 OFF 0 0.0

If utilize the "Default Value" as "OFF, 0, 0.0", the user just needs to set 2 Periods as below.

- (1) 08:00 ~ 09:50 ON 0 0.0
- (2) 10:00 ~ 11:50 ON 0 0.0
- After completing all settings, click "Save to PC" to save a configuration file in PC. (This demo uses "test1.txt")
- 7. Click "Back" to return to set up other Targets. (This demo sets Target 1 only)

# 17.4 Testing the "demo\_schedule" Project

This section shows the way to implement the Win-GRAF project and schedule configuration in the Win-GRAF PAC. Then testing the schedule control.

- Download the "demo\_schedule" project to the PAC by the Win-GRAF workbench. (For more information, refer to <u>Section 2.3.5</u>)
- 2. Download the schedule configuration to the PAC by the Schedule-Control Utility.
  - (1) Click "Send to Controller".
  - (2) Assign the PAC's IP address (remember to fill in your PAC's IP address) Set a password (This demo uses "0") Check "Remember Password" can remember this password Click "OK" to send the schedule setting to the PAC.
  - (3) If success, it will pop up a "Send file success" window.
- <u>Note:</u> Before downloading the project, make sure the Schedule-Control Utility on PAC has been activated. Moreover, add the \System\_Disk\Win-GRAF\Schedule\_in\_PAC.exe path in the Auto Execution page of the PAC Utility.



#### 3. Test the Win-GRAF project:

Click "On Line" to connect the PAC by the Win-GRAF workbench, then open the "NewSpy1" window. If the connection is fine, we can see variables - Target\_01\_xxx ~ Target\_10\_xxx are controlled properly by the schedule configurations which is set by the "Schedule-Control Utility".

The user may use the "Schedule-Control" Utility to modify the schedule configurations and then download to the Win-GRAF PAC to see if those variables are controlled well.

Win-GRAF - demo_schedule									
File Edit View Insert Proje	ect	Tools Window H	Help				_	_	
127 🛃 🖻 🛃 🕹 🕹 🛍	$\times$	🔨 🍋 🖉	淸  期 品	93	🔨 🖾 🖻 💡	ß'	📷 🚮 RU	N 🔹	
Workspace		NewSpy1.spl *					4		4X
🖃 — 🕨 demo_schedule (RUN)		Name	Value	7	Name	Δ	Value	Туре	
🞰 🔤 Exception programs		Year1	2017		🗉 🚮 Global varia	ables			
📄 🔤 Programs		Month1	7		Current_Page		0	DINT	
🐜 🎦 Main	∎+	Day1	5		Day1		5	DINT	
📄 🖓 📴 Watch (for debugging)		WeekDay1	3		Hour1		10	DINT	
Soft Scope		Hour1	10		Minute1		29	DINT	Ξ
🎫 Initial values		Minute1	29		Month1		7	DINT	
🗞 NewSpy1 📉		Second1	39		Second1		39	DINT	
Binding Configuration		Target01	TRUE		Target_01_BOO	L	TRUE	BOOL	
💮 😽 🚽 Global defines		Target02	FALSE		Target_01_DINT		10	DINT	
🖓 Variables		Target03	FALSE		Target_01_REAL	-	12.34	REAL	
Types		Target_01_BOOL	TRUE		Target_02_BOO	L	FALSE	BOOL	
🛄 (All Projects)		Target_01_DINT	10		Target_02_DINT		0	DINT	
		Target_01_REAL	12.34		Target_02_REAL	_	0.0	REAL	
		Target_02_BOOL	FALSE		Target_03_BOOI	L	FALSE	BOOL	
		To_Page	0		Target_03_DINT		0	DINT	
		Target_02_DINT	0		Target_03_REAL	-	0.0	REAL	
		Target_02_REAL	0.0		Target_04_BOOI	L	FALSE	BOOL	
		Target_03_BOOL	FALSE		Target_04_DINT		0	DINT	
		Target_03_DINT	0		Target_04_REAL	-	0.0	REAL	
		Target_03_REAL	0.0		Target_05_BOO	L	FALSE	BOOL	
		Current_Page	0		Target_05_DINT		0	DINT	
					Target_05_REAL	-	0.0	REAL	-
		•	۴		< III				Þ.

# 17.5 Configurations of the Schedule-Control Utility

## 17.5.1 Address for each Target Variables

The Schedule-Control Utility can configure max. 10 Target 's schedule. Each Target contains one BOOL variable, one DINT variable and one REAL variable.

### To enable the schedule-control in the Win-GRAF PAC, first add a "Schedule" in the "I/O boards"

windows (refer to <u>Section 17.2</u>). The user can declare all required variables in the "Variables" window, and add these variables in the "Binding" window and then assign correct "Identifier" number 5001 ~
5030 (refer to <u>Section 17.2</u> - Variable declaration). After downloading the Win-GRAF project to the PAC, the scheduling will control these variables well.

Address	Туре	Description	Address	Туре	Description
5001	BOOL	BOOL DINT and REAL	5016	BOOL	BOOL DINT and REAL
5002	DINT	variable controlled	5017	DINT	variable controlled
5003	REAL	by larget 1	5018	REAL	by larget 6
5004	BOOL	ROOL DINE and REAL	5019	BOOL	ROOL DINT and REAL
5005	DINT	variable controlled	5020	DINT	variable controlled
5006	REAL	by Target 2	5021	REAL	by Target 7
5007	BOOL		5022	BOOL	ROOL DINT and REAL
5008	DINT	variable controlled	5023	DINT	variable controlled
5009	REAL	by Target 3	5024	REAL	by Target 8
5010	BOOL	ROOL DINE and REAL	5025	BOOL	ROOL DINT and REAL
5011	DINT	variable controlled	5026	DINT	variable controlled
5012	REAL	by Target 4	5027	REAL	by Target 9
5013	BOOL	ROOL DINE and REAL	5028	BOOL	ROOL DINT and REAL
5014	DINT	variable controlled	5029	DINT	variable controlled
5015	REAL	by Target 5	5030	REAL	by Target 10

# 17.5.2 Target Configuration

Every Win-GRAF WinCE PAC can control maximum 10 "Target" (Target 1 to Target 10) devices. First, execute the Schedule-Control Utility and click "New" to create a new configuration file, the Targets will show as 10 buttons (See the figure below). The default Target names are "Target 1" ~ "Target 10". One Target can set up the schedules to fit different Seasons. The Target button will show a "\*" to distinguish it is enabled.

Addition to "New" a configuration file, the user can open an existing file in PC or get from the PAC.

New:Create a new file.Open from PC:Open an exist configuration file from PC.

Get from Controller: Get an existing configuration file from PAC (required enter the PAC 's IP and password) and then to show on the PC.

💀 Schedule-Control	Utility		
New		Open from PC Ge	et from Controller Help-about
	R Schedule-Control Utility		
	Save to PC Send to Controller	Controller time synchronization Open fro	m PC Get from Controller Help-about
	Title : Title		
	Target 1 *	Target 2	Target 3
	Target 4	Target 5	Target 6
	Towart 7	Townst 9	Terrest 0
	Target 7	Target o	Target 9
		Target 10	

### Change the Target Name to meet the needs of the field:

User can change the name of the Target, Season or other items to fit for the equipment at the application field. Please create a text file named "Label\_Name.txt" (as the figure below) and save it in the same folder with the Schedule-Control Utility "Schedule\_in\_PC.exe" (e.g., D:\Schedule-Control\ Station1\Label\_Name.txt).

#### Notes for creating the file "Label\_Name.txt":

- 1. If this file does not exist, the Target shows the default name (e.g., Target 1, Target 2).
- 2. In this file, change the target name (e.g., "Factory", the prefix/suffix of spaces will be erased.) or the name of other items (e.g., Season, Normal day, Holiday, Schedule, etc.) after the colon (":").
- 3. The user can create and edit it by using MS Notepad or other editors, but must select the "Unicode" format when saving it.
- 4. On the PAC, copy this file into the same folder with the Schedule\_in\_**PAC**.exe, i.e., \System\_Disk\ Win-GRAF\.

abel_name.txt							
榴菜(F) 編輯(E) 格式(O)	檢視(V)						
說明(H)							
Target1 : Target 1	月 另存新福						×
Target2 : Target 2		D:\Schedule-Cor	ntrol\Station1	-	<b>↔</b> 搜装	<i>尋 Station1</i>	Q
Target3 : Target 3							
Target4 : Target 4	檔案名	稱(N): label_name	e.txt				<b>-</b>
Target5 : Target 5	左檔型	1 1 1 1 1 1 1 1 1 1 1 1 1	txt)				
Target6 : Target 6	13 144.2		ony				
Target7 : Target 7					_		
Target8 : Target 8	→ 瀏覽答料/	志(B)	編碼(E): Unicode	•	- 7	存檔(S) 取	ノ消
Target9 : Target 9	(m.e.e.)	~(0)		<u> </u>			
Target10 : Target 10							
Season Always : Seaso	n Always						
Season 1 : Season 1	=						
Season 2 : Season 2							
Season 3 : Season 3		Luch					
Season 4 : Season 4	Schedule-Cont	rol Utility				<b>a</b>	
Normal day : Normal da	ay Save to PC	Send to Controller	Controller	time synchronization	Open from PC	Get from Controller	Help-about
Holiday 1 : Holiday 1	Title : Title						
Holiday 2 : Holiday 2							
Special day : Special da	ау						
Schedule1 : Schedule 1		Target 1	Тя	arget 2		Target 3	
Schedule2 : Schedule 2	2	Itigot I	10	arget 2		Tuget 5	
Schedule3 : Schedule 3	6						
Schedule4 : Schedule 4	↓ <b> </b>						
Schedule5 : Schedule 5	5						
		Target 4	Ta	arget 5		Target 6	
		Target 7	Ta	arget 8		Target 9	
				reat 10			
			1 a:	iget 10			
			· · · · · · · · · · · · · · · · · · ·				

## 17.5.3 Season Configuration

Each "Target" (1 ~ 10) includes the "Season Always", "Season 1", "Season 2", "Season 3" and "Season 4" setting items. It is recommend to check "Season Always" that means to enable the year-round schedule.

### The Searching Priority of Seasons:

- 1. PAC will first search the **Season 4** (if it is enabled) If found the current date in the Season 4, then do the Boolean/Integer/Real control.
- 2. If not found, then search the Season 3, Season 2..., at last search the Season 1.
- 3. If not found, then search the **Season Always** to do its control.
- 4. If not found the current date in this Target, then do the "Default Value" control.

🖳 Schedule-Control Utility	Target 1 > Season 4 > Normal day		
Back Save to PC	✓ Target 1 ✓ Default Value	Boolean Integer OFF v 0	Real 0.0
	Season 4 Every year	From 2013/Oct/01	To 2013/Dec/31
Season Always *	Season 1 Seaso	n 2 Season 3	Season 4 *
Low			High
	🗷 Normal day		Schedule 1 *
Normal day (Schedule 1 *)	Apply Schedule 1 * -	[	Schedule 2
<ul> <li>Holiday 1</li> <li>Holiday 2</li> </ul>	<ul><li>Monday</li><li>Tuesday</li></ul>	[	Schedule 3
Special day	<ul> <li>Wednesday</li> <li>Thursday</li> <li>Eviday</li> </ul>	[	Schedule 4
	Saturday		Schedule 5

#### **Season Setting:**

Season  $1 \sim 4$  need to set its "Date Period". After completing the settings, recommend to check the "Every Year" option to apply the Date Period every years.

- Note 1: The Date Periods of the 4 Seasons must not overlap.
- **Note 2:** If the "Every Year" is checked, the system diagnoses the overlap of Month/Day only, not the year. If the "Every Year" is not checked, it will diagnose the "From" Year/Month/Day should be earlier than the "To" Year/Month/Day.

🖳 Schedule-Control Utility	Target 1 > Season 4 > Nor	rmal day				
Back Save to PC	☑ Target 1	Default Value (	Boolean OFF 🗸	Integer O	Real	
(	I Season 4	🗹 Every year	From Oct	v01	To Dec	/81
Season Always *	Season 1	Seaso	n 2	Season 3	Seas	on 4 *

**<u>Note</u>**: Unchecked the "Every Year" can modify the date periods, and take notice of the date order.

#### For example:

#### 1. The Correct Setting:

User can check "Every Year", so that the setting will be used for every year.

Season 1	01/01 ~ 03/31
Season 2	04/01~07/15
Season 3	07/16~09/30
Season 4	10/01 ~ 12/31

#### 2. The Wrong Setting:

Because the Season 2 overlaps the date of Season 1 from 03/16 to 03/31.

Season 1	01/01 ~ <b>03/31</b>
Season 2	<b>03/16 ~</b> 07/15
Season 3	07/16 ~ 12/31
Season 4	Disabled

# 17.5.4 Normal Day / Holiday / Special Day Configuration

There are Normal day, Holiday 1, Holiday 2 and Special day in each Season. When enabling the setting, users must choose a Schedule number (1 to 5) to apply the time settings.

Normal day	The normal days are Monday to Friday.			
Holiday 1 Normally set to Saturday and Sunday.				
Holiday 2 In some workplace, there are different holidays, e.g., Wednesday.				
Special Day	Set the schedule for local holidays or the adjusted working-day. E.g., Oct. 10, Jul. 4, Oct. 1, Dec. 25, etc. A maximum of 50 days can be set per Season.			



### A. The Searching Priority of Normal Day / Holiday / Special Day:

The PAC will first search **"Special day"**. If the date is not found in this Special day setting, then search **"Holiday 2"**, then **"Holiday 1"**, and then **"Normal day"**.

### B. Default Value for Boolean / Integer / Real:

Each Target must set the default value for the Boolean, Integer and Real variables. These default values will be applied when the PAC cannot find any available "Date Period" or "Time Period" in the enabled "Season" setting. Then the PAC follows the setting of the Default Value. Usually, the Default Value of Boolean is set to be "OFF", the Integer and Float value are set to be "O". User can set the different Default Value by the case.

#### C. Date Setting for Normal day / Holiday 1 / Holiday 2:

Note that NO OVERLAP. For example,

The	Correct	Setting:
-----	---------	----------

Normal day	Monday, Tuesday, Wednesday, Thursday, Friday
Holiday 1	Sunday, Saturday
Holiday 2	Disabled

The Wrong Setting: (Because "Friday" overlaps in the setting of "Normal day" and "Holiday 2".)

Normal day	Monday, Tuesday, Wednesday, Thursday, <b>Friday</b>
Holiday 1	Saturday
Holiday 2	Sunday, <mark>Friday</mark>

#### D. Date Setting for Special Day:

The "Special day" is for special schedule, such as the special holidays or make-up workdays. Each Season can set maximum 50 Special days. The searching priority of the "Special day" is higher than the priority of Holiday 2 and Holiday 1 and Normal day. Each enabled "Special day" date must select a Schedule number  $(1 \sim 5)$  to be applied.



## 17.5.5 Schedule Configuration

Each Season can set up maximum 5 Schedules (Schedule 1 ~ 5), and each Schedule can set up maximum 15 Time Periods. The time unit is "minute", in the range of "00:00 ~ 24:00".

Season Always *	Season 1	Season 2	Season 3	Season 4 *						
<ul> <li>Normal day</li> <li>Holiday 1</li> <li>Holiday 2</li> <li>Special day</li> </ul>	<ul> <li>Normal day</li> <li>Apply Schedule</li> <li>Sunday</li> <li>Monday</li> <li>Tuesday</li> <li>Wednesday</li> <li>Thursday</li> <li>Thursday</li> <li>Friday</li> <li>Saturday</li> </ul>	1	Sched Sched Sched Sched	ule 2 ule 3 ule 4 ule 5						
Schedule 1		Copy from								
Hour ♥ 01: 8 ▼ 02: 13 ▼ 03: 0 ▼ 04: 0 ▼ 05: 0 ▼ 06: 0 ▼ 07: 0 ▼ 08: 0 ▼ 09: 0 ▼ 10: 0 ▼ 11: 0 ▼ 11: 0 ▼ 13: 0 ▼ 14: 0 ▼	Minute     To     Hour       30 ▼     12 ▼       0 ▼     17 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼       0 ▼     0 ▼	Minute	Boolean         Integer           ON         10           OFF         0           OFF         0	Real         12.34         25.67         0						
Save and exit	Save and exit Cancel									

### EX: The following setting is correct.

No.	Time Period	Boolean	Integer	Real
01	00:00 ~ <b>08:00</b>	OFF	100	30
02	<b>08:00</b> ~ 12:00	ON	150	25.5
03	<b>12:00</b> ~ 13:00	OFF	120	27
04	<b>13:00</b> ~ 17:00	ON	150	25.5
05	<b>17:00</b> ~ 24:00	OFF	100	30

### The Searching Priority of Time Period:

The searching priority of the Time Period in the schedule is in the order from the largest number to the smallest number.

No.	Time Period	Boolean	Integer	Real
01	00:00 ~ 08:00	OFF	100	30
02	08:00 ~ 12:00	ON	150	25.5
03	12:00 ~ 13:00	OFF	120	27
04	13:00 ~ 17:00	ON	150	25.5
05	17:00 ~ 24:00	OFF	100	30

For example, the following table shows five Time Periods settings .

- 1. The searching will in the order from No. 5 to No. 1 (05, 04, 03, 02, 01). If the Time Period overlaps, the PAC will follow the larger number setting to control the schedule.
- If the PAC cannot find the current time in any Time Period in the "15" ~ "01", it follows the setting of "Default Value".

Schedule	1													
									Сору	from				
	Ho	ur	Min	ute	То	Ho	or	Min	ute		Boole	an	Integer	Real
<b>V</b> 01:	0	•	0	•		8	•	0	•		OFF	•	100	30
<b>V</b> 02:	8	•	0	-		12	•	0	-		ON	•	150	25.5
<b>V</b> 03:	12	•	0	-		13	-	0	•		OFF	•	120	27
<b>V</b> 04:	13	•	0	-		17	•	0	•		ON	•	150	25.5
<b>V</b> 05:	17	•	0	•		24	•	0	•		OFF	•	100	30
06:	0	•	0	- T		0	- T	0	•		OFF	-	0	0
07:	0	<b>-</b>	0	-		0	<b>-</b>	0	•		OFF	-	0	0
08:	0	- T	0	-		0	-	0	<b>•</b>		OFF	-	0	0
09:	0	- T	0	-		0	<b>-</b>	0	<b>-</b>		OFF	-	0	0
10:	0	- T	0	-		0	- T	0	- T		OFF	-	0	0
<b>11</b> :	0	<u> </u>	0	- T		0	- T	0	- T		OFF	-	0	0
12:	0	<u> </u>	0	- T		0	- T	0	- T		OFF	-	0	0
13:	0	- T	0	<b>-</b>		0	<b>_</b>	0	<b>-</b>		OFF	-	0	0
<b>14</b> :	0	- T	0	<b>-</b>		0	Ŧ	0	<b>•</b>		OFF	-	0	0
15:	0	-	0	-		0	Ŧ	0	Ŧ		OFF	-	0	0
Save and exit														

## 17.5.6 Save and Send the File to the PAC

After completing the configurations, please save and then send it to the PAC:

💀 Schedule-Control Utility	
Save to PC Send to Controller	Controller time synchronization Open from PC Get from Controller
1. 2.	

1. Click "Save to PC" to save the configuration file (" \*.txt ").



2. Click "Send to Controller" to send the configuration file to the linked PAC. Please assign the PAC IP address and set up the password (default: 0). Check the "Remember password" can save the password for speeding the next sending process.



## 17.5.7 Time Synchronization

If the PAC has not synchronized the system time after working a long period (e.g. one year), the time may be differ over 10 seconds to a few minutes. For the time synchronization of the controller, the Schedule-Control Utility provides a function to set the PAC time from the PC.

🖳 Schedule-Control Utility		
Save to PC Send to Controller	Controller time synchronization	Open from PC Get from Controller

#### Steps:

- 1. Your PC must connect to an Ethernet Switch and then to the Win-GRAF PAC by using Ethernet cables.
- 2. Click "Controller Time Synchronization" button, and enter the current IP address of the PAC and the password (defaults: 0).
- 3. Set a new date, hour, minute and second.
- 4. Click "Set new Controller time" button to set the new time to the PAC.

Controller info				
IP: 192.168.75.101				
Password :				
🔽 Remember password				
OK Cance				

🖳 Controller time setting				<b>X</b>
		Hour	Minute	Second
Controller time :	2017年 7月 7日 📃 🔻	11	45	20
Set new Controller time :	2017年7月7日 🔍 🗸	11 👻	<b>43</b> •	30 🗸
			Set	new Controller time

## 17.5.8 Schedule-Control Utility in PAC Site

The configuration process on the PAC side is similar as the process in the PC side, just a little bit different on the screen. Please refer to Section 17.5.2 to 17.5.6.

1. Target Configuration:



## 2. Season Configuration:

Schedule-Contr	ol Utility	Target 1 > 9	Season Always	> Normal day
Save and implemen	it Back		Help-abo	out Exit
Targ	et 1 🔽 Enable	Boolea Default Value OFF	in Integer 0	Real
Season A	lways 🖌 Enable	Always		
Season Always *	Season 1	Season 2	Season 3	Season 4
<ul> <li>Normal day (Sch</li> <li>Holiday 1</li> <li>Holiday 2</li> <li>Special day</li> </ul>	Normal day 🗸 edule 1 *)	inable Apply Schedule 1 * Sunday Monday Tuesday Wednesday Mednesday Friday Saturday		Schedule 1 * Schedule 2 Schedule 3 Schedule 4 Schedule 5

## 3. Special Day Configuration:

Setting				
	Target 1 > S	eason Always⇒	> Special day	/
		Always		Date info
			Di	ate No. 1
				Enable
				Null
				Apply
				Delete
	Add a new	/ date		
Save Setting		Clear all		Exit

# 4. Schedule Configuration:

Schedule 1				
Period No. 🛛 H	Hour Minute	~ Hou	ir Minute	Boolean Integer Real
01 💌 8	30 💌	12	<b>v</b> 0 <b>v</b>	ON 💌 10 12.34
Copy From	Start		End	(Boolean , Integer , Real )
01:	08:30	~	12:00	(ON, 10, 12.34)
02:	13:00	~	17:30	(ON, 20, 25.67)
03:	00:00	~	00:00	(OFF,0,0)
04:	00:00	~	00:00	(OFF,0,0)
05:	00:00	~	00:00	(OFF,0,0)
06:	00:00	~	00:00	(OFF,0,0)
07:	00:00	~	00:00	(OFF,0,0)
08:	00:00	~	00:00	(OFF,0,0)
09:	00:00	~	00:00	(OFF,0,0)
10:	00:00	~	00:00	(OFF,0,0)
11:	00:00	~	00:00	(OFF,0,0)
12:	00:00	~	00:00	(OFF,0,0)
13:	00:00	~	00:00	(OFF,0,0)
14:	00:00	~	00:00	(OFF,0,0)
15:	00:00	~	00:00	(OFF,0,0)
Save and exit	:			Cancel

## 17.5.9 Using Schedule-Control in the eLogger HMI

eLogger is a free charge and an easy-to-use HMI software platform developed by ICP DAS. It can be used to design the Local HMI and the Web Server HMI for remotely controlling the PAC through a web browser on your PC or cell phone. All Win-GRAF PAC support eLogger HMI.

For instructions on eLogger HMI, visit the following web page for the Win-GRAF FAQ-018 and FAQ-019:

<u>www.icpdas.com</u> > Support > FAQ > <u>Win-GRAF Soft-Logic PAC</u> > <u>FAQ-018</u>, <u>FAQ-019</u> or <u>http://www.icpdas.com/root/support/faq/win-graf.php</u>



You can download the sample program ("Demo\_faq018\_all. zip" or demo\_faq019\_all. zip) directly on the Win-GRAF FAQ page, or in Win-GRAF-PAC-CD (\napdos\win-graf\demo\_ project\), and then operate and test the project according to the contents of the document.