

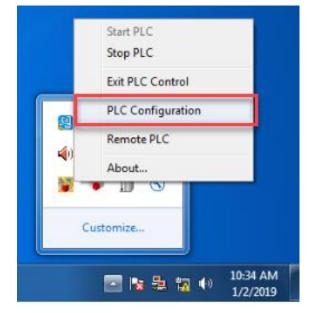
Advantech SE Technical Share Document

Date	2018 / 01 / 02						
Category	■ FAQ □ SOP	Related Product	APAX/CODESYS				
	Driver Tech Note						
Abstract	How to void PLC overloading on CODESYS?						
Keyword	Watchdog, Task, PLC Lo	Watchdog, Task, PLC Load					
Related OS	N/A						
Revision History							
Date	Version	Author	Reviewer	Description			
2018/01/02	V1.0 0	wen.Chang	Nick.Liu				

Problem Description & Architecture:

Watchdog is an important mechanism to void PLC overloading because of a rapidly increasing task cycle time. Overloading means PLC doesn't have enough resource to complete the task. An infinite loop is the most common one to cause overloading (> 100%). This document will show how to monitor the PLC load and set watchdog for each task.

Brief Solution - Step by Step:



Right click RTE icon and click **PLC Configuration**.



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This page will show kernel information and kernel state. PLC Load is showed below:

System Configuration	x
Diagnostic Startup Component Manager Application Logger Scheduler File Target	
Kemel Information	_ 1
Target Name: APAX-5580	
Target Address: 0000.0FFD;(DEMO) Target Version: 3.5.10.0	
Target Type: 0x1006 Target ID: 0x16350002	
Kemel State:	_
Kernel State: LOADED Timestamp (seconds): 500319	
Scheduler State: ACTIVE. 1 IEC tasks scheduled	
PLC Load: 10%	
0% 100%	-
1. Application (running)	
1. Application (unning)	
2.	
3.	
4.	
5.	
Last System Error	
Timestamp: 0x0 Class == ERROR ErrorID: 0x1 ComponentID: 0x1 Errortext; *** Error: Component <cmp>APAXBUS5400</cmp> NOT loaded	
Enonex. Enor. Component Component Component School Structure in Provided	
OK Can	cel

Task cycle time can be monitored in Task Configuration. (online mode only)

evices 🗸 🗸 🗙	Device	2	1ainTask 🕖 🧱 Ta	sk Configurat	ion X PLC_PR	G	
Task_test	Properties System Events Monitor						
Device (Advantech SoftMotion x86 RTE V3) Device (Advantech SoftMotion x86 RTE V3)	Task	Status	IEC-Cyde Count	Cycle Count	Last Cycle Time (µs)	Average Cyde Time (us)	Max. Cycle Time (µs)
= O Application	MainTask	Valid	4988	4988	918	921	1292
Ibrary Manager 3 PLC_PRG (PRG) Image: Configuration Image: Configuration Image: Co							
Devices POUs						1	



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If task cycle time is very close to the task interval, PLC load will be high. Moreover, if task cycle time is more than the task interval, PLC load will exceed 100% and performance become low. Thus, setting watchdog is neccesary to aware of unexpected cycle time. Watchdog is enabled in each task page.

When task cycle time exceeds the watchdog time, PLC will **<u>stop</u>** and **<u>report exception error</u>** as below: Please examine task's POUs and adjust the task interval if necessary.

task_test.project - CODESYS							_		\times
Eile Edit View Project Build	Online Debug Tools Window Help								₹
in a k n a l e i e i e i e i e i e i e i e i e i e i e i	a 🗈 🗙 l 🗛 🎎 🐴 🌿 l 🖷 l 🎘 • [) 🕮 🁒 🧐 🌖	■ % L∃ 9∃	⁴⊒ *≣ \$ \$ ⊼	≓ ∿∕				
Devices - 7 ×	PLC_PRG 🕤 Device 🗙 🧭	GVL 🙀 Task Co	nfiguration	MainTask					•
task test Tevice [connected] (CC	Se Backup and Restore	everity Time Stamp		Description			Component		^ ^
B-B Plc Logic	Backup and Restore	16.01.2019 09	16.01.2019 09:53:42.297 *SOURCEPOSITION* App=[Application] area=65535, offset=-1					CmpIecTask	
Application [sto	Files	E 16.01.2019 09	:53:42.297	*EXCEPTION* [OmittedCyc	le watchdog] occurre	d: App=[Application], Task=	CmpIecTask		
GVL		• 16.01.2019 09:53:37.827 Application [Application] loaded via [Download] • 16.01.2019 09:52:50.551 Application [Application] loaded via [Download]					CmpApp		
Library Manag	Log						CmpApp		
PLC_PRG (PRC		16.01.2019 09:52:00.561 Application [Application] loaded via [Download]				CmpApp			
🖻 🎆 Task Configura		16.01.2019 09:51:47.389		Setting router 4 address to (06f5:0001)			CmpRouter		
🗐 🍪 MainTask	210 L II	16.01.2019 09:51:47.323		CODESYS Control Service: DEMO mode activated, terminating in approx. 120			CM		~
PLC_F									111 *
-	Watch 1							•	φ X
	Expression	Application	Туре	Value	Prepared value	Executionpoint		Address	Comm
< >	<								>
Z Devices POUs	Watch 1 Breakpoints								
Messages - Totally 0 error(s), 0 v	warning(s), 5 message(s)								
Device user: Anonymous	Last build: 😋 0 😗 0 🛛 Precompile: 🗸	fb STOP	Program lo	aded - EXCEPTION	Program u	nchanged	Project user: (no	obody)	0

Reference:

https://help.codesys.com/webapp/ cds dlg rtev3 system configuration;product=core codesys control; version=3.5.13.0