SIEMENS

S120 控制伺服电机速度控制器的自动优化

S120, Speed controller, Auto Tuning

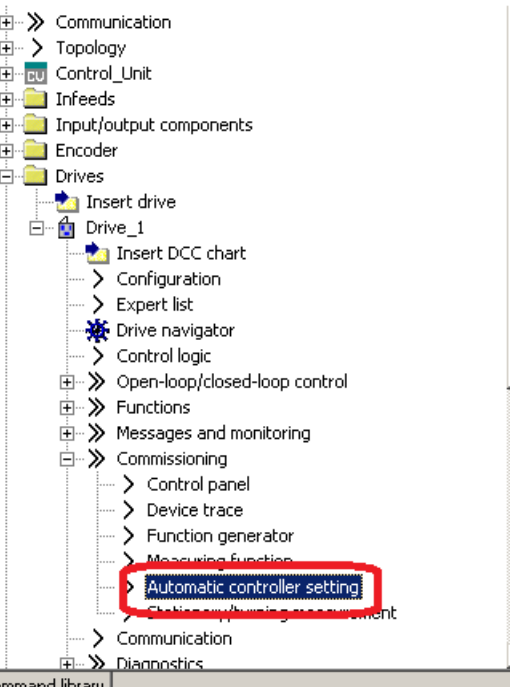http://support.automation.siemens.com/CN/view/zh/109748497

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1 概述

在实际伺服控制应用中，负载运行过程中有时会出现电机啸叫或运行不流畅的情况，此时可以考虑对伺服电机的速度控制器进行优化来解决这些问题。

STARTER\SCOUT 软件为用户提供了伺服电机的自动优化功能(Automatic controller setting)，通过自动优化功能可以自动识别电流环，正负向负载测量，自动设置速度环参数等。注意此功能仅局限于 S20 的伺服控制方式。

2 自动控制器优化步骤

通过 STARTER\SCOUT 软件对控制器进行自动优化的步骤如表 2-1 所示。

序号	图示与说明
1.	在驱动的 "Commissioning" 中选择" Automatic controller setting"： 或者点击图标

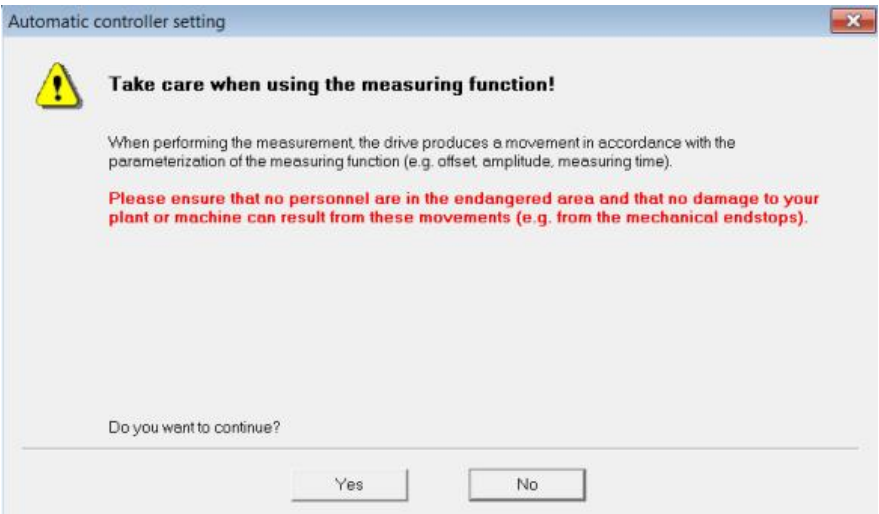| 2.	选择速度控制器及要优化的驱动：
3.	点击"Assume control priority!"获取控制权：
4.	点击"Accept"按钮，进行监控时间的确认：
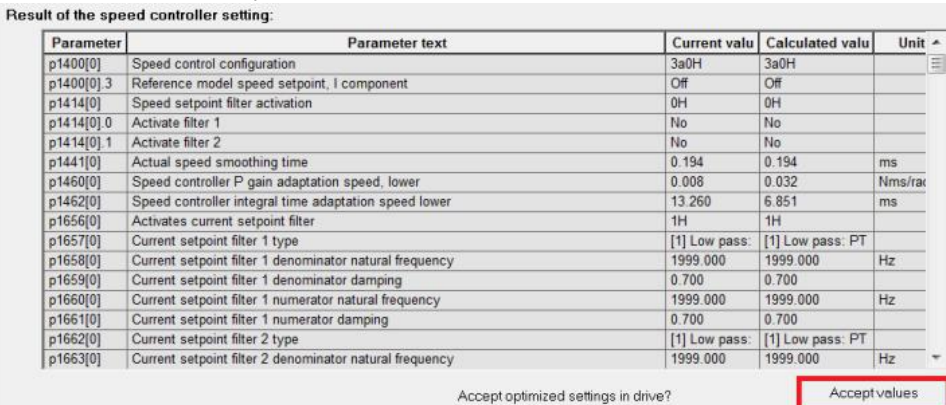
5.	点击 ▮ 按钮进行自动优化，随后点击执行所有步骤按钮 🔽🗃 开始测量，在弹出的警告窗口中点击" Yes" 按钮：

Automatic controller setting

⚠ **Take care when using the measuring function!**

When performing the measurement, the drive produces a movement in accordance with the parameterization of the measuring function (e.g. offset, amplitude, measuring time).

Please ensure that no personnel are in the endangered area and that no damage to your plant or machine can result from these movements (e.g. from the mechanical endstops).

Do you want to continue?

[Yes]   [No]

6. 通 过 S T A R T E R \ S C O U T	测量结束后，得到优化后的速度环及电流环参数与当前值对比，如下图所示，点击右下角的 " Accept values" 按钮接受计算结果：

Result of the speed controller setting:

Parameter	Parameter text	Current valu	Calculated valu	Unit
p1400[0]	Speed control configuration	3a0H	3a0H	
p1400[0].3	Reference model speed setpoint, I component	Off	Off	
p1414[0]	Speed setpoint filter activation	0H	0H	
p1414[0].0	Activate filter 1	No	No	
p1414[0].1	Activate filter 2	No	No	
p1441[0]	Actual speed smoothing time	0.194	0.194	ms
p1460[0]	Speed controller P gain adaptation speed, lower	0.008	0.032	Nms/rad
p1462[0]	Speed controller integral time adaptation speed lower	13.260	6.851	ms
p1656[0]	Activates current setpoint filter	1H	1H	
p1657[0]	Current setpoint filter 1 type	[1] Low pass:	[1] Low pass: PT	
p1658[0]	Current setpoint filter 1 denominator natural frequency	1999.000	1999.000	Hz
p1659[0]	Current setpoint filter 1 denominator damping	0.700	0.700	
p1660[0]	Current setpoint filter 1 numerator natural frequency	1999.000	1999.000	Hz
p1661[0]	Current setpoint filter 1 numerator damping	0.700	0.700	
p1662[0]	Current setpoint filter 2 type	[1] Low pass:	[1] Low pass: PT	
p1663[0]	Current setpoint filter 2 denominator natural frequency	1999.000	1999.000	Hz

Accept optimized settings in drive?   [Accept values]

7.	注意：在执行完成动态辨识后，需要上载参数📊到计算机，并且执行 " Copy RAM to ROM" 🖳操作。

表 2-1 速度控制器自动优化步骤