

常问问题 • 2 月/2009 年

如何通过 SI WATOOL FTC 软件对 失重秤进行调试

SIWAREX FTC, 失重秤, 重力模式, 容积模式

http://support.automation.siemens.com/CN/view/81211415

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1. 系统硬件配置

(1)系统结构图



(2)控制系统硬件如下(以一台 FTC 模块为例):







(3) 串口通信电缆

Copyright © Siemens AG Copyright year All rights reserved 两端都是 9 针接口,一端连接电脑的 COM 口,另一端是模块的 RS232 口,有 2 米和 5 米长两种,订货号分别为:7MH4702-8CA 和 7MH4702-8CB



用户也可以自己制作该通信电缆,线序如下:

PC COM 口端子	称重模块 COM 口端子
2	3
3	2
5	5

2. 如何通过 SIWATOOL FTC 软件进行失重秤调试

(1) 打开 SIWATOOL 软件,点击 Online,软件会自动将称重模块中数据读取上来

Untitled - SIWATOOL_V3_FTC_L - V. 3	.1.3
File Communication View Tools ?	
New Open Save Online	Language Print Display Message
	<u>]</u> , <u> </u> ,
Tree View 01 Close Tree	
Siwatool FTC_L	Offline
 Filter Calibration param. 1 Calibration param. 2 Calibration param. 2 Calibration param. 3 Theoret. Adjustment Massis parameter (DR4) Coss-in-weigh param. 1 (DR6) Interface parameter (DR7) Date & Time (DR8) Application ID (DR9) Loss-in-weight param. 2 (DR1 Info Flow rate 	Communication status Receive all records from the SIWAREX FTC Request data record
internal Cut-off freq. 1	OK Abort
internal Cut off from 2	

(2) 写入重量单位、校秤砝码重量(Reference 1) 和传感器特征值

本例中重量单位为 kg,砝码重量 20kg,传感器特征值为 2mV/V

-	Calibration param. 3		
	DS_003_PARAM_020	DS_003_PARAM_020_AUSWAHL_000	DS_003_PARAM_020_AUSWAHL_000
	Standstill time (ms)	1000	1000
	Standstill range	0.020	0.020
	Max. waiting time for stands	2000	2000
	Zero set val (%)	10	10
	Zero set val. + (%)	10	10
	Zeroing val - (%)	1	1
	Zeroing + (%)	3	3
	Tare max. val. T- (%)	100	100
	Regulations		
	Weight unit	kg	kg
	Weight unit (large)	t	t
	Lenght unit	m	m
	Determination time (Adj	10000	10000
	Weight factor	1000	1000
A	diustment parameter (DR3)		
A F	djustment parameter (DR3)		
₽	djustment parameter (DR3) Info Adjustment		
₽	djustment parameter (DR3) Info Adjustment Adjustment digits for zero	4237092	4237092
• •	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1	4237092 4822433	4237092 4822433
+	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2	4237092 4822433 0	4237092 4822433 0
4 ⊕	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3	4237092 4822433 0 0	4237092 4822433 0 0
₽ +	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4	4237092 4822433 0 0 0	4237092 4822433 0 0 0
+	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4 Reference 1	4237092 4822433 0 0 0 0 20	4237092 4822433 0 0 0 0 20
▲ + -	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4 Reference 1 Reference 2	4237092 4822433 0 0 0 0 20 0	4237092 4822433 0 0 0 0 20 0
•	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4 Reference 1 Reference 2 Reference 3	4237092 4822433 0 0 0 0 20 0 0 0 0 0 0 0 0 0 0 0 0 0	4237092 4822433 0 0 0 0 0 20 0 0 0
•	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4 Reference 1 Reference 2 Reference 3 Reference 4	4237092 4822433 0 0 0 0 20 20 0 0 0 0 0 0 0 0 0 0 0 0	4237092 4822433 0 0 0 0 20 0 0 0 0 0 0 0 0 0 0
•	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4 Reference 1 Reference 2 Reference 3 Reference 4 Characteristic value range	4237092 4822433 0 0 0 20 20 0 0 0 0 0 20 0 0 20 20 20 2	4237092 4822433 0 0 0 0 20 20 0 0 0 0 0 0 0 0 0 0 0 0
+	djustment parameter (DR3) Info Adjustment Adjustment digits for zero Adjustment digits 1 Adjustment digits 2 Adjustment digits 3 Adjustment digits 4 Reference 1 Reference 2 Reference 3 Reference 3 Reference 4 Characteristic value range Loading cell type	4237092 4822433 0 0 0 20 0 0 0 0 0 0 0 2mVV#2 Analoge strain gauge load cell	4237092 4822433 0 0 0 0 20 0 0 0 0 0 0 0 0 0 0 0 0 0

(3)将 SIWAREX FTC 控制模式设置为 Loss-in-weight (失重秤)

(F)	Calibration param. 2 Calibration param. 3		
	Operating mode	Loss-in-weight	Loss-in-weight
	Automatic zeroing	Automatic zeroing off	Automatic zeroing off
	Zero setting at start-up	Switch-on zero setting, not when tare >< 0	Switch-on zero setting, not when tare
	Zero setting upon start-up	Zero setting switched off	Zero setting switched off
	Scale division type	Multi-range scale (1 3)	Multi-range scale (1 3)
	Number of weight ranges	1 Range	1 Range
	Scale name	SIWAREX	SIWAREX
\square	Calibration param. 1		

(4)设定称重传感器量程及显示分辨率

 Calibration param. 2 		
Minimum range 1	0	0
Maximum range 1	500	500
Resolution range 1	0.020	0.020
Minimum range 2	0	0
Maximum range 2	0	0
Resolution range 2	0	0
Minimum range 3	0	0
Maximum range 3	0	0
Resolution range 3	0	0

(5)进入服务模式,右下角看到红色小扳手图标

📕 Untitle	d - SIWA	TOOL	_V3_F
File Comm	unication	View	Tools
New	🗼 Open	Sav	l i /e c
	- 1	22	<i>6</i> - E
Service n Service n	node on (1) node off (2)))	
🔊 Adjustme	ent zero va	lid (3)	
Adjustme	ent weight :	1 valid	(4)
<i>s</i> [®] Adjustme	ent weight :	2 valid	(5)
Adjustme	ent weight :	3 valid	(6)
Adjustme	ent weight (4 valid	(7)
പ്പ് Load fac	tory setting	js (8)	

执行完毕后,可以看到当前重量显示为 0.00kg

Untitled - SIWATOOL_V3_FTC_L - V. 3	.1.3	
File Communication View Tools ?		
New Open Save Online Offic	ne Language Print Display Message	
]• 🔲•	
Tree View 01 Close Tree		477
Siwatool FTC_L	Offline	
 B Commissioning Adjustment parameter (DR3) 		
. Info		
Adjustment	-	
Filter	Actual display	×
 Calibration param. 1 		
Calibration param. 2	72	0.001-
E Calibration param. 3	В	0.00kg
Theoret. Adjustment		

(7)标砝码重量

把 20kg 的标定砝码放在失重秤上如下图所示,



然后执行命令 4:



执行完毕后,显示 20kg

Untitled - SIWATOOL_V3_FTC_L - V.	3.1.3		
File Communication View Tools ?			
New Open Save Online Off) 🛕 - 🗐	75kg EF nt Display Message	
	-		
Tree View 01 Close Tree			
Siwatool FTC_L	(Offline	
🖃 📫 Commisioning			
🖃 🗹 Adjustment parameter (DR3)	The second second		
⊞ Info	Actual display		×
 Adjustment 			
Filter	B	20 0	loka
 E Calibration param. 1 		20.0	JUNG
 Calibration param. 2 			
🛨 Calibration param. 3			

然后关闭服务模式,右下角显示红色小扳手图标消失。将 DR3 数据读取上来

(8) 设定失重秤额定重量

🖃 🗹 Loss-in-weigh param. 1 (DR6)		
⊞ Info		
Parameters		
Standard filling weight	75	75
Standard flow value	707.448	707.448
display time (flow)	1000	1000
Flow rate correction factor	1	1
Min. flow limit (0,01%)	2000	2000
Max. flow limit (0,01%)	12500	12500
flow stability time	3000	3000
Start refilling by (0,01%)	3000	3000
End refilling by (0,01%)	9000	9000
Settling time	5000	5000
Filling time	0	0
Filling monitoring time	0	0
Disable time	1000	1000
after max. filling time	do not stop filling	do not stop filling
stability weight	1.046	1.046
filtering for display	Filter 5	Filter 5
after max. filling time	do not stop dosing	do not stop dosing
Output by filling	correction	correction
display by filling	set value	set value

(9)设定输出电流特性

- 1	nterface parameter (DR7)		
+	Info		
+	S7-Interface		
+	S7-Alarm		
-	Analogue output		
	Process value for 0/4 mA	0	0
	Process value for 20 mA	100	100
	Replacement value for analogue	0	0
	Source for the analogue output	PID-control output#7	PID-control output#7
	Current range for the analogue o	0 20mA	0 20mA
+	RS232/RS485		
+	Digital outputs		
+	Digital inputs		

0/4mA 对应 0%,20mA 对应 100%;

电流输出设置为 PID-Control output;

电流范围 0-20mA 还是 4-20mA 由变频器控制信号决定;

(10)设定自动初始化参数

 Automatic parameters (DR19) Info Automatic parameters 		
Output direct set in %	0	0
Output 1 for automatic set up in 9	2000	2000
factor for automatic device param	2	2
Autom. Characteristic on/off	on	on
time for autom. Start up	20000	20000
Output 2 for automatic set up in %	4000	4000
Output 3 for automatic set up in 9	7000	7000
Output 4 for automatic set up in 9	9000	9000

(11)执行自动参数获取命令 164

<u>د</u> ،	RAAF]-
w 01	Dosing (man) on (150)	
	Dosing off (151)	
Siw	Totalizing on (152)	
	l otalising off (153)	-
Ad		
Ad	Refill off (155)	
Ad	Dosing (autoball) on (157)	
Ad	Dosing (auto/wol.) on (157)	
Ad	Dosing (auto/ygrav.) on (150)	
Re	Dosing (acto/voi/rioating) on (159) Received (160)	
Re	Emptying (auto) op (161)	
Re	Emptying (data) on (162)	
Re	Emptying (many on (162)	
Cł	Autoparameter start (164)	
La	Autom, Startup 1 (165)	
Ti	Autom, Startup 2 (166)	
] Filter	Autom. Startup 3 (167)	
1 Calib	Device adj. 1 on (171)	
Sc	Device adj. 2 on (172)	
Nu	Device adj. 3 on (173)	
Sc	Device adj. 4 on (174)	
Ze	Delete quality data (175)	
Ze	Factor 10% (176)	
Aυ	Factor 30% (177)	
Op	Factor 50% (178)	
] Calib	Factor 70% (179)	
	Factor 90% (180)	

命令执行完毕后,可以读取下列参数:

PID 参数,包括最大和最小比例系数,积分时间。

PID p	parameters (DR12)		
In	fo		
P	D-parameters		
	Gain factor Kp min. (x0,	30	13
	Integration time Ti	20000	10414
	Differentiator time Td	0	0
	Controller activation	Controller on	Controller on
	disable time start	10	10
	Controller error max. (0,	400	400
	Starting time vol.	12000	12000
	Min. flow rate set value	0	0
	Dead zone PID controll	0	0
	Min. time grav. mode vo	0	5000
	Max. time for contr. Erro	5000	0
	Lim. of set val. Increase	0	0
	Lim. of set val. Decreas	0	0
	Gain factor Kp max. (x0,	70	41
M	ode change > vol.		

滤波及稳态重量。注意稳态重量应尽可能小,一般应小于 0.1,否则需要检查装置装置是 否稳定,保证在执行命令 164 过程中设备没有晃动。

🖃 🗹 Loss-in-weigh param. 1 (DR6)			
. Info			
Parameters			
Standard filling weight	10		75
Standard flow value	10		701.048
display time (flow)	1000		500
Flow rate correction factor	1		1
Min. flow limit (0,01%)	2000		7500
Max. flow limit (0,01%)	12500		12500
flow stability time	3000		3000
Start refilling by (0,01%)	3000		3000
End refilling by (0,01%)	9000		9000
Settling time	5000		5000
Filling time	0		0
Filling monitoring time	0		0
Disable time	1000		1000
after max. filling time	do not stop filling		do not stop filling
stability weight	0.005		0.367
filtering for display	Filter 6		Filter 5
after max. filling time	do not stop dosing	2	do not stop dosing
Output by filling	correction		correction

失重秤的额定流量,该实验装置额定流量为 701.048kg

■ Loss-in-weigh param. 1 (DR6) Info		
Parameters		
Standard filling weight	75	75
Standard flow value	701.048	701.048
display time (flow)	500	500
Flow rate correction fac	1	1
Min. flow limit (0,01%)	7500	7500
Max. flow limit (0,01%)	12500	12500
flow stability time	3000	3000
Start refilling by (0,01%	3000	3000
End refilling by (0,01%)	9000	9000
Settling time	5000	5000

如果使用例子程序,在执行命令 164 时触摸屏上可以看到下列进度条:

L AI	utom. start up 2/2	-	RUN
filling level	96.09 %		
determinat determinat	tion standard flow rate tion filter parameter		
determina determina	tion PID parameter tion_stability parameter		
	282.50	kg/h	help
stop		t	EXIT

(12)执行命令 165

-# · •	
	Dosing (man) on (150)
Tree View 01	Dosing off (151)
Sin	Totalizing on (152)
5100	Totalising off (153)
Ti	Refill on (154)
. Filter	Refill off (155)
– Calib	Dos./Fill. off (156)
Sc	Dosing (auto/vol.) on (157)
Ni	Dosing (auto/grav.) on (158)
Sc	Dosing (auto/vol/floating) on (159)
7e	Reserved (160)
7e	Emptying (auto) on (161)
20 40	Emptying (man) on (162)
01	Emptying off (163)
Calib	Autoparameter start (164)
	Autom. Startup 1 (165)
)()) ba	Autom. Startup 2 (166)
Pr.	Autom. Startup 3 (167)
	Device adj. 1 on (171)
140	Device adj. 2 on (172)
M	Device adj. 3 on (1/3)
He	Device adj. 4 on (174)
Mi	Delete quality data (175)
M.	Factor 20% (170)
Re	Eactor 50% (177)
Calib	Eactor 70% (170)
D	Factor 90% (180)
<	1 0((0) 2078 (100)

执行完毕后可以看到 DR11 中的参数,DR11 描述了 SIWAREX FTC 模块的 4-20mA 输

	出 (以百分比形式表示) 与失重秤流量的对应关系
--	-----	----------	---------------

🗉 🗹 Device paarm. (DR11)		
+ Info		
Device chracteristic		
Min. output	0	
Max. output value incre-	0	
Max. output value decre	0	
Output 1	50	
Flow rate 1	5	
Output 2	0	
Flow rate 2	0	
Output 3	0	
Flow rate 3	0	
Output 4	0	
Flow rate 4	0	





执行过程中可以观察到变频器频率的变化,如下图所示:



(13)执行完上述初始化过程后,在 DR20 中输入流量设定值,该设定值可以是额定流

量的百分比,如下图所示 50% ,也可以是实际流量如 1000kg/s

🖃 🗹 Set value (DR20)	
⊞ Info	
Set flow rate	
Flow rate set value (real)	0
Flow rate set value (0,01%)	5000
volumetric/gravimetric	500
Time for volumetric mode	10000

(14)执行命令 158 进行自动配料即可



3. 失重秤控制性能分析

在 DR7 中设置 Trace 相关参数和周期,如 200ms

- 🗸 I	nterface parameter (DR7)		
+	Info		
+	S7-Interface		
+	S7-Alarm		
+	Analogue output		
+	S232/RS485		
+	Digital outputs		
+	Digital inputs		
-	MMC		
	Log overflow	with full memory, the oldest entries are overwritten	with full memory, the oldest entries are overwritte
	Trace overflow	The oldest trace data is overwritten when the card is	The oldest trace data is overwritten when the carc
	Memory for trace	Trace data is stored in RAM	Trace data is stored in RAM
	Memory segment for trace function	50	50
	Memory segment for logs (%)	50	50
	Trace function recording cycle	20	1
÷ 🗸 🕻	Date & Time (DR8)		
÷ 🗸 /	pplication ID (DR9)		

(1) 启动 Trace 功能,命令代码 70

(2)跟踪结束后,关闭 Trace 功能,命令代码 71

(3) 查询 RAM Trace ID 信息

Info ¹	
Process values	
Printer Log ID 0	
MMC ID 0x00x00x00x00x0 0x	0x00x00x00x00
MMC - memory capacity 0 0	
Capacity Log data 0 0	
Capacity Trace data 2097152 20	91248
Oldest MMC-Log-ID 0 0	
Youngest MMC-Log-ID 0 0	
Oldest MMC-Trace-ID 0 0	
Youngest MMC-Trace-ID 0	-
Oldest RAM-Trace-ID 0 0	
Youngest RAM-Trace-ID 0 81	

(4) 导出到 EXCEL 表格,生成曲线;

Siwatool FTC_L	RAM-trace data (DR1	21) - RAM-trace data		
	RAM-trace data (DR121) - F Element number Length	84M-trace data 81 64		Export to Excel
MMC-trace data (DR120) AMM-trace data (DR121) Info	Timestamp1	01.01.01 12:16:55 570 Mon		Export to File
	Unfiltered ADC value Filtered ADC value Net weight flow display	6147716 0.000000 65.279 0	Pulse counter value Flow internal 1 Flow internal 2	0 110.434 0
	Input byte		<u>6</u> 7 □□	

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(5) 通过曲线分析流量特性



4. SIWAREX FTC Firmware 更新

如果 调试过程中使用西门子提供的例子程序,建议将 SIWAREX FTC 版本进行更新,

步骤如下:

Image: Silver Tool V3_FTC_L - V. 3.1 File Communication View Tools ? Image: Silver Tools Rew Open Save Online Offline	3 A Print Display Message
Image: Close Tree Image: Close Tree], 🔲,
Siwatool FTC_L	Offline
 Filter Calibration param. 1 Calibration param. 2 Calibration param. 3 Theoret. Adjustment Basis parameter (DR4) Closs-in-weigh param. 1 (DR6) Interface parameter (DR7) Date & Time (DR8) Application ID (DR9) Loss-in-weight param. 2 (DR1 Info Flow rate internal Cut-off freq. 1 type internenal filter 1 internal Cut off freq. 2 	Communication status Receive all records from the SIWAREX FTC Request data record OK

(1)打开 SIWATOOL 软件,点击 Online

(2)选择 Transfer Firmware,如下图所示:

Untitled - SIWATOOL_V3_FTC_L - V. 3.1.3	
File Communication View Tools ?	
New Open Save Online Offline Language	- 🥭 75kg Print Display
]-
Tree View 01 Close Tree	
Siwatool FTC_L	
🗄 🚯 Commisioning	
🕀 📫 Test preparation	
🗉 📫 Monitor	
🕀 📫 Logging	
🗉 📫 Logging MMC	
🖃 🗛 Firmware Download	
🕀 Transfer firmware	

(3)选择扩展名为.bin 的版本文件 SWFT3_V5-3-1,点击 Start transfer 按钮(该文件

可以在西门子网站下载)

ansfer firmware pplication ID of the module	CONT - NAWI		-xxxx	-xxxx	- xxxx	- xxxx
pplication ID of the firmwa	CONT - NAWI	-	- xxxx	-	- ****	- xxxx
H:\ SecuFEx_2008-12-19_02-0 Loss_in_weight_Beta_Vers Liw531bs Setup	I7-48_79474 Setup.ra Sion FW Siwstee SWFT3	os.zip ar EX_FTC_LIW_Qu I2.1.2.sip IV5-3-1.bin	iick_Start_V	10_ge.dc	iC	
Siwatool 3.1.3						Ž
u Siwatool 3.1.3 ■ h:	All files (× *)				La .

(4)版本更新需要几分钟时间,请耐心等候。

- 11-			
	Transfer st	atus	
	Firmware transfe	r prepared	

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5. 常见问题

自动调试完成后,执行命令 158 后,变频器输出频率不随流量变化?

答:DR19 中的参数 Output direct set in %是否设置为 0,如果设置为其他数,那么初始 化完毕后,失重秤不会进入 PID 模式,而是以用户设定的速度百分比运行。

 Automatic parameters (DR19) Info Automatic parameters 		
Output direct set in %	0	0
Output 1 for automatic set up in 9	2000	2000
factor for automatic device param	2	2
Autom. Characteristic on/off	on	on
time for autom. Start up	20000	20000
Output 2 for automatic set up in 9	4000	4000
Output 3 for automatic set up in 9	7000	7000
Output 4 for automatic set up in 9	9000	9000

PID 控制器的比例系数如何设定?流量设定值如何设定?

答:SIWAREX FTC 内部 PID 控制器的比例系数随着设定值与实际值的偏差大小在某个 范围内自动调整,即 DR12 中的 Gain factor Kp min 和 Gain factor Kp max,上述参数在 自动初始化过程中自动获取,用户可以根据自己的需要进行微调。

Autom. Start 命令 165、166 和 167 有什么区别?

答:命令 165:获取 DR11 中的设备特性参数;

命令 166:获取 DR11 中的设备特性参数,然后投入容积模式;

命令 167:获取 DR11 中的设备特性参数,在容积模式下工作少许时间,随后投入重力 配料模式;

(4) 命令 Auto/Vol 和 Auto/grav, 与 Dosing on 模式之间什么关系?

Dosing on (150):启动体积配料模式,DR13 中定义的物料特性可以对流量起补偿作 用;但是不会根据料位高低进行补料;

Auto/Vol(157):启动体积配料模式,DR13 中定义的物料特性可以对流量起补偿作用, 根据料位高低进行补料;

16

Auto/grav(158):启动重力配料模式,此时 PID 控制器起作用,根据料位高低进行补料;

但是上述三种配料模式都可以通过 Dosing off 进行停止;

(5)empty on 启动排料,排料结束后,为什么执行了 empty off 电机还在运行?

答:通过观察 DR32 中的状态,可以看到执行 empty off 命令后,Dosing on 仍在执行, 所以还必须执行 Dosing off,电机才能停止转动。

(6)我想用 FTC 模块中的 CI+、CI-高速计数功能,在 SIWATTOOL 中的 DR30 /Fulse counter value 能监控到此值,但在 S7 中的 DB18 没有 DR30 中的内容,无法在 PLC 中 读到此值,请问有什么办法可以解决?

答:SIWAREX FTC 是一款多功能称重模块,可以用于失重秤,还可以用于皮带秤。当 用于失重秤时,过程参数保存在 DR32 中;当用于皮带秤或者其他应用时,过程值保存 在 DR30 中,此时 CI+、CI-用于连接速度传感器的脉冲信号。失重秤应用中 CI+、CI-没 有意义。

(7) 如何实现补料?

答:在 DR6 中设置补料方式:

按照物位进行补料:Start refilling by (0.0.1%)和 End refilling by (0.0.1%)

按照时间进行补料:Filling time

如果 Filling time=0,则自动按物位补料,否则按时间进行补料;

(8)为什么在 DB18.DBD744 中看不到毛重值?

DB18.DBD	744	"DB	_SCALE	_FTC".	.s_PROCE	SS_	VALUES.r	_GROSS_	WEIGHT_	_PROC	FLOATING	_POINT	0.0

答: 请确认 SIWAREX FTC 是否工作在 Loss-in-weight 模式下,SIWAREX FTC 默认的 工作模式为 Belt Scale。注意一定要在服务模式下,修改工作模式,用户可以通过 SIWATOOL FTC 软件修改,参见步骤(3);也可在 STEP7 中查看工作模式,如下图 所示:

通过命令 203 读取 DR3 中的内容,然后查看 DB18.DBB179 的数值:

如果 DB18.DBB179=3,则说明 FTC 工作在皮带秤模式;

如果 DB18.DBB179=4,则说明 FTC 工作在失重秤模式;

DB18. DBW 6 "DB_SCALE_FIC".i_CMD_INPUT DEC 203 203 DB18. DBX 8.0 "DB_SCALE_FIC".i_CMD_ENABLE BOOL false true	DB18.DBB	179	"DB_SCALE_FTC".s_JUST_DAT.b_SCALE_TYPE	DEC	3	
DB18_DBX 8.0 "DB_SCALE_FIC", bo_CMD_ENABLEBOOLFalsetrue	DB18.DBW	6	"DB_SCALE_FTC".i_CMD_INPUT	DEC	203	203
	DB18.DBX	8.0	"DB_SCALE_FTC".bo_CMD_ENABLE	BOOL	false	true