代谢笼校正及数据采集操作流程

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一、 气体校正。

1、将校正气体的管路接上主机标注的接口。



2、打开校正气体 N2 和混合 CO2 气体。分压阀打到 20psi 左右。



3、打开网页版 IM3 界面。点击右上角的 Utilities—Gas Analyzer Auto Calibration。

			Desertas	Olekus Configuration (1995) an
F - Analyzer Auto Calibration elect Analyzer Operations			Recordings	Calibration Gais Analyzer Calibration Gas Analyzer Auto Calibration
C Long Zero	ල් Short Zero ල් Span O2	O2 Delay Value (min.) CO2 Delay Value (min.) CO2 Span Value (%)	Cal Pressure: -2.184 kPa 60 10 0.494	utilities Access Control Doors WheelStop Firmware Tool
art/Stop Automatic Calibration	lo-Calibration			lystem System Time System Settings System Update Ogramin SableCAN
eal-time graph 0.0679 % 0.0678 % 0.0678 %	02_A 18.8601 % 02_B 20.7896 %	W/P_A 1.2466 kPa W/P_B 1.2466 kPa	BP_A: 102.1553 kPa BP_B: 102.1276 kPa	

4、在 CO2 Span Value 输入混合气检测证明上 CO2 的含量;检查 Short Zero, Span CO2, Span O2 是否都已经勾选,然后点击 Start Auto-Calibration。自动校正大概需要半小时。

Cor - Anaryzer Auto Calibiatio 1. Select Analyzer Operations Cong Zero Corg Long Zero Corg Ipan CO2		2 Estort Zero Estan 02		O2 Delay Value (min.) CO2 Delay Value (min.) CO2 Span Value (%)	Cal Pressure: -2.193 kPa 60 1 0.494	输入
2. Start/Stop Automatic Calibration ▶ Start Auto-Calibration Start Auto-Calibration	op Auto-Calibration					
3. Real-time graph						
CO2_A 0.0582 %	02_A	18.5530 %	WVP_A	1.2462 kPa	BP_A: 102.1349 kPa	
CO2_B 0.0577 %	O2_B	20.7896 %	WVP_B	1.2495 kPa	BP_B: 102.1251 kPa	
1.1 < 00 1.0 -						

校正的时候,首先校正的是 N2,然后会进行 CO2 校正。

下图展示的是 CO2 校正的情况。

						Recordings	Status	Configuration	Utiliti
C Long Zero		🕑 Short Zero		O2 Delay Value (min.)	Gai Pressure: 60	1.267 KMa			
🗹 Span CO2		🕑 Span O2		CO2 Delay Value (min.)	10				
				CO2 Span Value (%)	0.494				
2. Start/Stop Automatic Calibration									
Start Auto-Calibraton	op Auto-Calibration		Starting ST - State: Flu - State: Ap - State: Ap - State: Va - State: Op - State: Ch - State: Idi Starting CC - State: Ch - State: Ch	ord Zero celling N2 pressure shing calibration path phyling X2 gas to analyzers itting for calibration to complete phyling Zero shing calibration path 9 28 pan celling CO2 pressure shing calibration path phyling CC2 gas to analyzers itting for calibration to complete					
3. Real-time graph	0.19	46 %		0.0319 kPa	BP A: 102 1270 kF	a.			
CO2_B 0.4947 %	02_A 0.22	17 %	WVP_A WVP_B	0.0340 KPa	BP_B: 102.1221 kF	a			
115									
10-									
0.0-									
0.8 -									
07.4									
200)									

CO2 校正完成后, O2 的值会变成 20%左右。点击某一气体指标, 该指标会变成蓝色, 可看到其变化曲线图。



校正完成后,在右侧的状态栏最底部可以看到 All Calibration completed successfully, 代表着气体校正成功完成。如果出现问题,根据报错提示,做相应更改后再进行一下校 正。

\Box Module calibration

1、点击右上角的 Utilities—Module Calibration

			Recordings	Status	Configuration	Utilities +	LC
Module Calibration Single-module calibration				[Calibration Module Calibration Gas Analyzer Callb Gas Analyzer Auto	ration Calibration	
Module Details	Calibrate Zero Module	Output Messages			Utilities Access Control Dor WheelStop Firmware Tool	ors	
Controller Address Module Address Scan	Span to: Span Module Reset To Detaults				System System Time System Settings System Update		
New Address Change Address					Diagnostics SableCAN		
Quick Test			.to				

2、在左上角的下拉菜单里选择需要校正的 module, 通常是多个 modula 一起校正。

Module Calibration		
Multi-module calibration -		
Single-module calibration		
Multi-module calibration		Output Me
Controller Address	1	
Mass Monitor #1		
Mass Monitor #2		
Mass Monitor #3		
Mass Monitor #4		
	Span Cage	
Zero System	Zero Cage	

3、点击 Zero System, 该功能相当于天平的去皮, 要确认所有 Cage 的体重、饮水和饮食 模块都没有悬挂在传感器下。在该功能校正的时候, 需要注意两个指标, 第一, 是不是所 有的 module 都是 online, 如果提醒 no found, 需要检查线路是否松动。第二, 需要注意 post-zero 后的数值是否满足你要求的精度。如果达不到, 可以多点击几次 zero system。

odule Calibration Multi-module calibration	
Cage Calibration	Output Messages
Controller Address Mass Monitor #1 Span Value Mass Monitor #2 Span Value Mass Monitor #3 Span Value Mass Monitor #4 Span Value Zero Cage Span Cage	Attempting to zero all modules for 16 cages Attempting to zero all modules for cage 1 Module at 1 as-found value: -0.1621, post-zero value: -0.0002 Module at 3 as-found value: -0.7754, post-zero value: -0.0005 Module at 3 as-found value: -3.6417, post-zero value: -0.0016 Zero cage 1 completed Attempting to zero all modules for cage 2 Module at 1 as-found value: 2.637, post-zero value: -0.0011 Module at 2 as-found value: 2.637, post-zero value: -0.0011 Module at 3 as-found value: 2.637, post-zero value: -0.0023 Zero cage 2 completed Attempting to zero all modules for cage 3
System Calibration	Module at 1 as-found value: 1.2895, post-zero value: -0.0006 Module at 2 as-found value: 3.877, post-zero value: 0.0033
Zero System	

4、将砝码放入各个模块中,用天平称量各个加了砝码的模块的重量。State 默认的 address#1 是饮食模块, address#2 是饮水模块, address#3 是体重模块。确保各个模块挂 到相应的 Cage 里,然后点击 Span Cage。

Cage Calibration	确保校正笼盒
Controller Address	」₅位置
Mass Monitor #1 Span Value	250.66
Mass Monitor #2 Span Value	207.64 输入相应模
Mass Monitor #3 Span Value	183.06 1470 日本
Mass Monitor #4 Span Value	大你里贝里
Zero Cage	Span Cage
System Calibration	
	Zero System

可以多点击几次 Span Cage, 直到测出的值和输入值误差在可接受范围内。将各个模块转移到下一个 Cage, 更改 Controller Address 的地址和 Cage 保持一致(注意, 一定要记得更改 Controller Address 和模块所在的 cage 保持一致, 否则, 软件设置会报错, 回到出厂设置。), 点击 Span Cage。重复该过程, 直到需要校正的笼盒都完成。

Module Calibration		
Multi-module calibration •		
Cage Calibration		Output Messages
Controller Address	5	Attempting to span all modules for cage 5
Mass Monitor #1 Span Value	250.66	Module at 7 as-found value: 207.6447, post-span value: 207.6482 Module at 2 as-found value: 207.6132, post-span value: 207.6482
Mass Monitor #2 Span Value	207.64	Unable to span module 4, no span value specified
Mass Monitor #3 Span Value	183.06	Span cage 5 completed
Mass Monitor #4 Span Value		
Zero Cage	Span Cage	
System Calibration		
	Zero System	

5、回到 IM3 的 home 界面, 点击 Record。

Status		Utilities
Parameter	Description	Actions
State	READY	Recording 1 O Record Stop
Action	On Standby	Pumps Dff
Storage Available	110.38 GB (of 117.2 GB Total)	
Network Info		C Restart
Setting	Value	
Rack ID	1	
IP Address	10.10.101	

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在跳出的对话框中输入本次测试的名称,默认是日期+___,然后点击 save。

		File Name		×
Status		File Name:		
Parameter	Description	2021-01-26_zhaoli_1	Please specify the recording file name. The variables {datetime},	
State	READY	·	{date}, {rack}, {ip}, {config} are supported.	
Action	On Standb			
Storage Available	110.38 GB			_
Network Info			Cancel Sav	е
Setting	Value			
Rack ID	1			
IP Address	10.10.10.10	1		

缓冲 30s 后, 会出现采集数据 file。实验开始。

Status		Utilities	
Parameter	Description		Actions
State	HARVESTING_DATA	Recording 1	
Action	Reading from cage(s) 1 and 9	Pumps	
Is Recording	YES		
Last Sample	2021-01-26 12:43:24	System	C Restart
File Size	22.09kb		
Recording File	2021-01-26_zhaoli_1.exp		
	Edit Remarks Animal Data Entry Add Marker Edit User Notes		
Storage Available	110.38 GB (of 117.2 GB Total)		
Network Info			
Setting	Value		
Rack ID	1		
IP Address	10.10.101		

附:点击右上角的 Recording,可以看到已经采集和正在采集的数据。

Name	Date	Size	Download	Tools	
2021-01-26_zhaoli_1	2021-01-26 12:43:55	49.46kb	.exp .exd RT LK	View Realtime	8
2021-01-20_	2021-01-25 05:06:02	330.29mb	.exp .exd RT LK	View Realtime	
2021-01-15_songhao	2021-01-19 01:35:42	239.79mb	.exp .exd RT LK	View Realtime	8
2021-01-15_test	2021-01-15 03:15:37	215.40kb	.exp .exd RT LK	View Realtime	Ê
20210114_songhao_2	2021-01-14 11:37:09	95.18kb	.exp .exd RT LK	View Realtime	Ê
20210114_songhao	2021-01-14 11:29:28	47.60kb	.exp .exd RT LK	View Realtime	Î
20210113_songhao	2021-01-13 09:11:12	95.18kb	.exp .exd RT LK	View Realtime	î
test 1	2021-01-04 14:43:04	388 33mb	explexdIRTIIK	View Realtime	

Recordings

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点击 Staus, 可以看到各个 Cage 的状态。

							R	ecordings Statu
System Status								0 1
Gas Analyzer(s)								
Flows								
Cages 2 11	2							
**	Food	Water	BodyMass	**	Food	Water	BodyMass	
Cage 1 🕽	245.635g	326.956g	108.421g	Cage 9 🗸	236.919g	326.846g	106.527g	
Cage 2 🕽	250.869g	339.527g	105.127g		Access@1	Open		
Cage 3 🎔	247.449g	332.199g	127.633g		YBreaks	124		
	Access@1 XBreaks YBreaks	Open 227 220		Cage 10 💙	237.991g	344.362g	107.444g	
	ZBreaks	85			Access@1 XBreaks YBreaks ZBreaks	Open 187 161 19		
Cage 4 🗲	234.128g	336.747g	104.553g					
Cage 5 🗲	225.492g	320.789g	106.722g	Cage 11 ¥	238.0850	335 212n	103 5300	
Cage 6 🗲	237.598g	319.090g	109.113g	ouge 11 -	Access@1	Onen	100.000g	
Cage 7 🎔	233.178g	324.313g	106.139g		XBreaks YBreaks ZBreaks	240		
	Access@1 XBreaks YBreaks ZBreaks	Open 201 193 20				72		
				Cage 12 🗙 🚯	241.767g	Error	Error	
Cage 8 🎔	236.534g	325.851g	105.015g		Access@1 XBreaks YBreaks ZBreaks	Error Error		
	Access@1 XBreaks YBreaks ZBreaks	Open 178 204 66				Error Error		
				Cage 13				
					Access@1 XBreaks			