6270A Setup as a non-Autodetect (manual) Support Device in COMPASS

The 6270A pressure controller can be setup as an Autodetect device in COMPASS for Pressure version 5 and higher. This is the preferred method to use a 6270A in COMPASS for Pressure.

However, it is quite easy to setup as a non-Autodetect device. Instructions below are screen-shots from the setup in COMPASS for Pressure. These screen-shots show the commands that can be used with any software (e.g. LabVIEW, HyperTerminal, Putty).

Note that the highest ranged module should be in slot 1 of the 6270A controller (due to a bug in COMPASS for Pressure that will be fixed in v5.0.50.

In COMPASS for Pressure, make a new Support Device by the [Setup], <Support Device> menu path, then click the blank white paper icon to make a new Support Device. Fill in the blanks and make selections as follows.

	Support Device Editor		×
Record Label 6270A 3000) psi gauge, not Autodetect	11 / 76 ↓ ↓	D
Header Calibration Communications	- Output Set Comment		Đ
Support Device Type	Advanced Device {>1 Output}		
Record Type	Individual	•	
Manufacturer	Fluke Calibration	• M	- 1
Model	6270A	_	X
Serial Number	EnterSN		
Identification			H
Customer ID			
	This device can be used as a DUT.		
			_
	Close		

	Support	Device Editor		×
Record Label 6270	A 3000 psi gauge, not i	Autodetect	11 / 76 ∢	D
Header Calibration Communica	tions Output Set	Comment		
Calibration Date	8 / 8 /2015 -	Calibration Due Date	8 / 8 /2016 🗸	
Calibration Performed By	Fluke Calibration	Certification ID		K)
Calibration Setting1		Calibration Setting3		
Calibration Setting2		Calibration Setting4		X
M&TE Device	v			
Record Last Edited	9/23/2015 9:16:49 4	M		Ô
Record Last Edited By	Admin			Ø
		<u>C</u> lose		

Support Device Editor	×
Record Label 6270A 3000 psi gauge, not Autodetect	
Header Calibration Communications Output Set Comment	E H
└ Interface ─ Common read and set interface.	R
Data Acquisition Type RS232 💌	
RS232 Port CDM1 Ports	
RS232 Settings 9600,N,8,1	X
Handshaking None	
Binary Command Set 🥅	
Command Timeout(s) 8	
Command Terminator CR> <lf></lf>	
Response Terminator CR> <lf></lf>	

This setup goes to 3000 psi but you can edit as necessary on the following screens.

	Support Device Editor	×
Record Label 6270A 3000 ps	i gauge, not Autodetect	D
Header Calibration Communications Ou	tput]Set Comment	Đ
Final Output Labels		
1)Pressure Read	Output #1	K)
Raw Output	Pressure 0.00000 - 3000.00000 psi	
Final Output	General Pressure: 0.00000 / 3000.00000 psi	\mathbf{X}
	Edit Output	<u></u>
Add	Edit Commands	-
Copy <u>R</u> emove		2

Edit the max pressure as necessary, and the resolution. If you have a very low range PMM like that 2.5K you will want six digits of resolution past the decimal.

0	Output Relationship
Raw Output Final Output To	olerance
Required Raw Outpu	uts to determine Final Output
Output Type	Pressure
Output Source	RS232 💌
Minimum	0.00000
Maximum	3000.00000
Resolution	0.00001 🗨
┌─ Raw Output to Final Outpu	ut Relationship
Same {Raw Output = Fin	nal Output}
<u>0</u> K	Cancel

Change to absolute mode if necessary. If you want to operate in absolute and gauge mode there are two options:

1. Make this an advanced device and make two outputs that are the same but one is gauge, the other absolute

2. Copy this setup when done, copy it, and change the new setup to absolute.

Output R	elationship	×
Raw Output Final Output Tolerance		
Label	Pressure Read	
Output Type	Pressure	
Final Output	General Pressure 📃 💌	
Pressure Measurement Mode	Gauge 💌	
Unit	psi	
Minimum	0.00000	
Maximum	3000.00000	
Resolution	0.00001	
	Cancel	

This is the tolerance for a PM200 module. Edit as necessary.

Output Relationship
Raw Output Final Output Tolerance
Number of Tolerance Segments 1 💌 Segment Tolerance 🌫 Span 0.020
Tolerance Segment Definition All Final Outputs
<u> </u>

19	Output Command Editor:Pressure Read	×
Commands Read *1)meas:pres?	Command Global Settings Command Global Settings Command Type Read Command Number 1 Command Number 1 Command meas:pres? Delay After Command (s) 0 Read Response X Process Response X Manipulate Response Image: Command	
	<u>O</u> K	

19	Output Command Editor:Pressure Read	×
Commands Read *1)meas:pres?	Command Global Settings Use Multiplexer Never Poll Frequency (ms)	
	<u><u>D</u>K</u>	V

The Set tab

Support Device Edi	tor
Record Label 6270A 3000 psi gauge, not Autodetect	
Header Calibration Communications Output Set Comment	@
Final Set LabelsSet #1	
1)Pressure Set Raw Set Pressure 0.0000 Final Set General Pressure	0 - 3000.00000 psi e Control: 0.00000 / 3000.00000
	Edit Set 🛛 🕹 🗙
Edi	t <u>C</u> ommands
Use Ready Status 🔽 🛛 Edi	t <u>R</u> eady Command
AddUse Remote Vent 🔽 Edi	t Vent Command(s)
Use Remote Control Abort I✓ Edit	Abort Command(s)
Close	

	Set Relationship		×
Raw Set Final Set Tolerance	•]		
Set Tune	Pressure	Dsi 🔹	
Set Source	RS232		
Minimum	0.00000		
Maximum	3000.00000		
Resolution	0.00001		
Raw Set to Final Set Relat	ionship		r I
Same (Raw Output = Fin	al Output}	•	
О	Cance	el	

Set Rel	ationship	×
Raw Set Final Set Tolerance		
Label	Pressure Set	
Set Type	Pressure	Y
Final Set	General Pressure Control	•
Pressure Measurement Mode	Gauge	•
Unit	psi	Y
Minimum	0.00000	
Maximum	3000.00000	_
Resolution	0.00001	-
	Cancel	

Set	Relationship
Raw Set Final Set Tolerance	
Number of Tolerance Segments Segment Tolerance %Span	1 • %Span • 0.020
Tolerance Segment Definition	All Final Outputs
<u></u> K	<u>C</u> ancel

Back to this screen and click the [Edit Commands] button.

Hecold Ea	Berling and anno bei gange, no	(Autode		E
der Calibration Cr	mmunications Output Set			
Einal Sot Labola		Set #1		7
1)Pressure Set	Raw Set	Pressure	0.00000 - 3000.00000 psi	-
	Final Set	General	Pressure Control: 0.00000 / 3000.00000	-
		<i>.</i>	<u>E</u> dit Set	The second se
			Edit <u>C</u> ommands	
	Use Ready Status		Edit <u>R</u> eady Command	
Add	Use Remote Ven	_ ي	Edit Vent Command(s)	
<u>B</u> emove	Use Remote Control Abor	L 🛛 🗌	Edit Abort Command(s)	

The first Set command is to set the new pressure setpoint. Press the black/white disk icon to save it when done.

19	Set Command Editor:Pressure Set	×
Commands Set "1)pres (x) Set 2)outp:mode cont	Command Global Settings Command Type Set Command Number Command Number Command pres [x] Delay After Command (s) Read Response Process Response F Apply Set Replace [x]	
	<u></u>	

Ø	Set Command Editor:Pressure Set	×
Commands Set *1)pres [x] Set 2)outp:mode cont	Command Global Settings	C) Bra
	Use Multiplexer Never Poll Frequency (ms) N/A	
		×
	<u><u> </u></u>	

Click the white piece of paper to make a new command. The second command is to put the 6270A in control mode.

Ø	Set Command Editor:Pressure Set	×
Commands Set *1)pres [x] Set 2joutp:mode cont	Command Global Settings Command Type Set Command Number 2 Command outp:mode cont Delay After Command (s) 0 Read Response Process Response Apply Set Image: Command Complexity Set	
1	<u><u>D</u>K</u>	

Back to this screen and click the [Edit Ready Command] button. This is optional. If you don't use a Ready/Not Ready reply from the 6270A just setup your test so that COMPASS determines Ready (In the Set child tab on the Pressure tab screen).

	Suppor	t Device	Editor		×
Record Label 627	70A 3000 psi gauge, no	t Autodeteo	t	11 / 76	, D
Header Calibration Communic	cations Output Set	Comme	nt]	and al a	- P
Final Set Labels	Raw Set	Set #1 Pressure 0.	00000 - 3000.000	00 psi	
	Final Set	General Pr	essure Control: 0.0	0000 / 3000.00000	0
			<u>E</u> dit Set Edit Commands		- x
Add 1	Use Ready Statu:	s 🔽 🔄	Edit <u>R</u> eady Com	mand	
 Copy U:	Use Remote Ven se Remote Control Abor	ים <u>ק</u> וי עד	Edit <u>V</u> ent Comm Edit <u>A</u> bort Comm	and(s) vand(s)	0
		Close	1		

- Commands Read *1)STAT:OPER:COND?	Command Global Settings	C
	Command Type Read	
	Command Number 1	
	Command STAT:OPER:COND?	
	Delay After Command (s) 0	K
	Read Response 🕱	
		$\neg \mid \mathbf{x}$
	Manipulate Response RuskaReadyNotheady	
		_ (?
	ОК	

To interpret the Ready/Not Ready reply requires a macro named "RuskaReadyNotReady".

Ø	Set Ready Command Editor:Pressure Set	×
Commands Read *1)STAT:OPER:COND	0? Command Global Settings	Ď
	Command Type Read	
	Command Number 1 💌	
	Command STAT:OPER:COND?	
	Delay After Command (s)	
	Read Response 💌	
	Process Response	$-\mathbf{x}$
	Manipulate Response RuskaReadyNotReady	
1	ParseCrystal33Lo , ParseDMMResponse	
	ParseScanListRead	P
	OK ParseXP2	
	Value = True/False	

If you don't already have that in the drop down list for "Manipulate Response" select "Add/Edit New Macro" to open the Macro Editor. Click on the Reply Parser folder.

d	COMPASS Macro Editor
Edit Settings	
🗅 🖾 🔜 🗠 X 🙀	
All Code	Title
🛱 🚥 💼 DataFile	RuskaReadyNotReady
🛱 🛲 💼 GetCommand	
🖶 🖶 GlobalCode	2018 '************************************
🛱 🔤 Interface	2019 Function RuskaReadyNotReady(Reply, ParamID, colRange)
🕸 🛱 🕮 🛱 🛱 🛱	2020
e ReplyParser	2021 '"STAT: OPER: COND?" command returns the value In Operation Status Conditi
Declaration	2022 'If bit 1 Is On, the system is in the process of setting pressure, which
	2023 'If reply has 2^1, system is Not Ready.
	2024 'If you get 16 (16 = 2^4) or 144 (144 = 2^7 plus 2^2), neither of them h
	2025 'If you get 18 (18= 2^1 plus 2^4) the pressure is Not Ready since it has
Get EM2456PHursiditu	2026
Get EM2456Temperature	2027 If (Reply and $2 = 0$) Then
GetWest6100Temperature	2028 BuskaPeadyNotPeady=1
LogToFile	
MensorPCS400Filter	2030 RuskaReadyNoLReady-0
ParseARANGE	2031 End IF
🗖 ParseCrystal33Hi	2032
ParseCrystal33Lo	2033 End Function
ParseDMMResponse	2034
ParsePrsandReady	2035
PareeScanListRead	

Click the blank white paper to make a new ReplyParser macro. Below in color is the text of the macro that you can copy then paste into a new ReplyParser macro in the Macro Editor. Use [Ctrl]+[v] on your keyboard to paste into the macro because right-clicking the mouse doesn't have a Paste option in the Macro Editor. Everything in green in the macro editor is a comment. Enter the name of the macro "RuskaReadyNotReady" in the Title box and press the black/white disk icon to save the macro when done.

Function RuskaReadyNotReady(Reply, ParamID, colRange)

"STAT:OPER:COND?" command returns the value In Operation Status Condition Register.
'If bit 1 Is On, the system is in the process of setting pressure, which means "Not Ready".
'If reply has 2^1, system is Not Ready.
'If you get 16 (16 = 2^4) or 144 (144 = 2^7 plus 2^2), neither of them have 2^1 so both are Ready.
'If you get 18 (18= 2^1 plus 2^4) the pressure is Not Ready since it has 2^1.
If (Reply And 2 = 0) Then

```
RuskaReadyNotReady=1
Else
RuskaReadyNotReady=0
```

```
End If
```

End Function

Ø	Set Ready Command Editor:Pressure Set	×
Commands Read *1)STAT:OPER:COND	? Command Global Settings	
	Use Multiplexer Never	
		K)
		× ②
	<u>0</u> K	

Back to this screen and click the [Edit Vent Command(s)] button.

	Suppor	t Devic	e Editor	
Record Lab	pel 6270A 3000 psi gauge, no	t Autodet	ect 11 / 76	
ader Calibration Co	mmunications Output Set	Comm	ent]	
Final Set Labels		Set #1		
1)Pressure Set	Raw Set	Pressure	0.00000 - 3000.00000 psi	
	Final Set 🛛	General F	ressure Control: 0.00000 / 3000.00000	
			<u>E</u> dit Set	
			Edit <u>C</u> ommands	
	Use Ready Status	•	Edit <u>R</u> eady Command	
	Use Remote Ven		Edit Vent Command(s)	
<u>R</u> emove	Use Remote Control Abor		Edit <u>A</u> bort Command(s)	
		<u>C</u> lose	1	

Set 1)outp:mode vent	Command Global Settings	
	Command Type Set	_ 벽
	Command Number 1	
	Command outp:mode vent	•
	Delay After Command (s)	- K
	Head Hesponse	
		>

69	Vent Command Editor:Pressure Set	×
Commands Set 1 joutp:mode vent	Command Global Settings Use Multiplexer Never Poll Frequency (ms) N/A	
	<u><u> </u></u>	Ø

Back to this screen and click the [Edit Abort Command(s)] button.

	Support De	evice Editor	
Record La	bel 6270A 3000 psi gauge, not Auto	detect 11 / 76	L.
ader Calibration Co	mmunications Output [Set] Co	omment]
Final Set Labels	Se Se	t #1	
1)Pressure Set	Haw Set Press Final Set Gene	ure 0.00000 - 3000.00000 psi ral Pressure Control: 0.00000 / 3000.00000	
		<u>E</u> dit Set	
		Edit <u>C</u> ommands	
, 	Use Ready Status 🔽	Edit <u>R</u> eady Command	
	Use Remote Vent 🔽	Edit Vent Command(s)	
<u>R</u> emove	Use Remote Control Abort 🔽	Edit <u>A</u> bort Command(s)	
	<u>C</u> k		

69	Abort Command Editor:Pressure Set	×
Set 1)outp:mode vent	Command Global Settings	
	Command Type Set	J 🖻
	Command Number 1	
	Delay After Command (s) 0 Read Response	
	<u> </u>	

69	Abort Command Editor:Pressure Set	×
Commands Set 1)outp:mode vent	Command Global Settings Use Multiplexer Never Poll Frequency (ms) N/A	
	<u><u> </u></u>	

Here's the Comments tab

Support Device Editor	×
Record Label 6270A 3000 psi gauge, not Autodetect	, D
Header Calibration Communications Output Set Comment	- B
Device Comment	
Resolution is set to 0.00005 psi. Change units and resolution as desired. Tolerance is set for PM200. Change as necessary.	NO.
Mode is set for gauge. Change to absolute or copy this setup and make that one absolute if both are needed.	X
Chara I	

Press the black/white disk icon to save the setup.

Test setup with 6270A as the reference device and the controller in COMPASS

In COMPASS for Pressure, make a new Test by the [Setup], <Test> menu path, then click the blank white paper icon to make a new Test. Alternately edit or copy an existing test.

Fill in the blanks and make selections as follows. These instructions will only show the screens and sections that are specific to use with the 6270A controller.

	Test Editor
Test Record Label 6270A test	4 / 48
Test Definition Type Simple Pressure Test	
Test Pressure Data Auxiliary Comment	
eak Test	Exercise
Run Leak Test 🥅	System exercise 🥅
Leak Test Unit %DUTS:	Exercise Unit %DUTSpa
Leak Test Target (%DUTSpan)	Min Target (%DUTSpan)
Set Target Timeout (s) 360	Max Target (%DUTSpan) 100
Leak Rate Limit (%DUTSpan/s) 0.005	Dwell (s)
Dwell(s) 60	Number Of Repetitions 2
Leak Test Time (s) 600	Hold Limit (%DUTSpan)
Abort test on failure 📈	Set Target Timeout (s)
	Abort test on failure
	Chara

Choose the 6270A as the Read (reference or measure) and the Set (control) device.

		Test Editor			×
Test Record Lat	oel 6270A test		-	3 / 48	<u>Г</u>
Test Definition Ty	pe Simple Pressure Te	est		•	
	sta l Aunifianul Comm	ant			92
Test Pressure Points - p		General Set			
2) 10	13)	Unit	Dsi		רש וו
3) 20	14)	Measurement Mode	Gauge		āl I x
5) 20	16)	Read	6270A 3000 p	si gauge, not Auto	n
6) 10 7) ATM	17)	Set	, 6270А 3000 р:	si gauge, not Autor	
8)	19)	Jog Before Dwell	N/A		1 🖾
9)	20)	Regulate	None	▼ 45	- -
11)	22)	Dwell	Automatic	▼ 30	s
<u> </u>	•	Pressure Cycle	1		
Insert	Auto Fill	Vent after each cycle			

Note that I setup the 0 psi points as ATM points because I don't want the 6270A to control to 0 psi gauge. Because the 6270A is setup with a Vent command, COMPASS will vent the 6270A at these points. Set these as ATM points by hovering the cursor over the point number until the cursor changes to a hand, then left-click the mouse and select "ATM Point". This will insert a point so if you already have a zero point delete the zero point.

		Test Editor			×
Test F Test De Pre-Test Pre Test Pressur	Record Label 6270A test efinition Type Simple Pressure Test essure Data Auxiliary Commer e Points - psi	nt General Set	.	3 / 48	
1) [A	121 New Point ATM Point Minimum Pressure Maximum Pressure Vent system Valve Driver Change Pre Point Macro Delete Point	Unit Measurement Mode Read Set Jog Before Dwell Regulate Dwell Pressure Cycle Vent after each cycle	psi Gauge 6270A 3000 psi 6270A 3000 psi 7470A 3000	gauge, not Autor gauge, not Autor gauge, not Autor v v 45 s v 30 s	× ×

Here is the Set tab. For "Ready Criteria" choose "Controller". COMPASS will query the 6270A to check that it's within the "Hold Limit" and "Stability Limit" for the "Ready Hold Time" to determine Ready status and to proceed from the pressure generation/control status to the Dwell time or Data collection process. In this example we chose a stability limit that is 10 times better than the specifications of the DUT that will be calibrated. Click the blue/white question mark icon to open the COMPASS Help File to read more about this. The information in the Help File is on the "Test Point Sequence" link and then the "Test Points Sequence, [Set] Child Tab" link.

	Test Edito	r	×
Test Record Label 6270A test Test Definition Type Simple Pressure To Pre-Test Pressure Data Auxiliary Comm Test Pressure Data Auxiliary Comm 1) ATM 12) Comm 1) ATM 12) Comm 1) ATM 13) Comm 1) ATM 14) Comm 4) 30 15) Comm 5) 20 16) Comm 6) 10 17) Comm 7) ATM 18) Solution 9) 20) Comm Comm 11) 22) Comm Comm 4 Solution Solution Comm 9) 20) Comm Comm 11) 22) Comm Comm 4 Auto Fill Comm Comm	est General Set Pressure Control	Control mode Dynamic Ready Criteria Controller Hold / Stability Unit psi Hold Limit (psi) 0.01 Stability Limit (psi/s) 0.002 Ready Hold Time (s) 5 Control Timeout (s) 300	
	Close		

During Test Initialization the 6270A will be selected as the "Reference Pressure" and the "Test Pressure Control" device.

5	Ru	n Test (Hardware Setup) -	×
– Test Hardwa	e Configuration		
	Ambient Pressure	None	•
	Ambient Temperature	None	-
	Ambient Humidity	None	-
	Reference Pressure	6270A 3000 psi gauge, not Autodetect / Pressure	-
	Test Pressure Control	6270A 3000 psi gauge, not Autodetect / Pressure Set	-
	Multiplexer	None	•
	Valve Driver	None	-
		Default Hardware Setup	

The 6270A screen will look this. There is no [Load Settings] button because it's not an Autodetect device.

Manufacturer	Fluke Calibration	Customer ID	
Model	62704	RS232 Settings	COM1:9600.N.8.1
Serial Number Identification	EnterSN	Parameter ID	
Output (1 / 2) Reference Customize Output	ce Pressure Output Label:Pressure Change Display	•	
Min (Max	psi) 0 (psi) 3000	Head He	ight 0.0 cm
Measurement M	ode Gauge 💌		
Raw Output T	ype Pressure		
Pressure	(psi) RS232		

Here is a view of the 6270A window when running a test. Note that the Green circle for Pressure indicates that COMPASS has determined that the Ready criteria has been met.



Here's a view when it's setting the 10 psi gauge point. The pressure is not within the Hold Limit, nor is the Stability Limit being met, so the circle is red. See the COMPASS Help File for more information on this. The other indicators are based on DUT status.



Contact Fluke Calibration Pressure Technical Support at pressuresupport@flukecal.com or call +1.877.355.3225