

# orbitACS

## SI400

A Four Channel system for easy connections into PLC or Automation

### Description

Solartron Metrology, the world leader in linear measurement innovation, introduces a new Orbit<sup>®</sup>3 based system for easy, low cost connections into PLCs and process control systems. The SI400 will connect to, and power, three additional sensors for a four channel reading. You can even combine gauging probes, Orbit<sup>®</sup> LT, and Orbit<sup>®</sup> LTH on the same stack of modules. No other digital system offers this!

### Features

Integral Readout with colour LCD Display and keypad.

Set tolerance and process limits via keypad

Detachable probe plug on housing for easy installation.  
(*Gauging probes, Block Gauges & Flexures only*)

Replace probe with no calibration or reprogramming

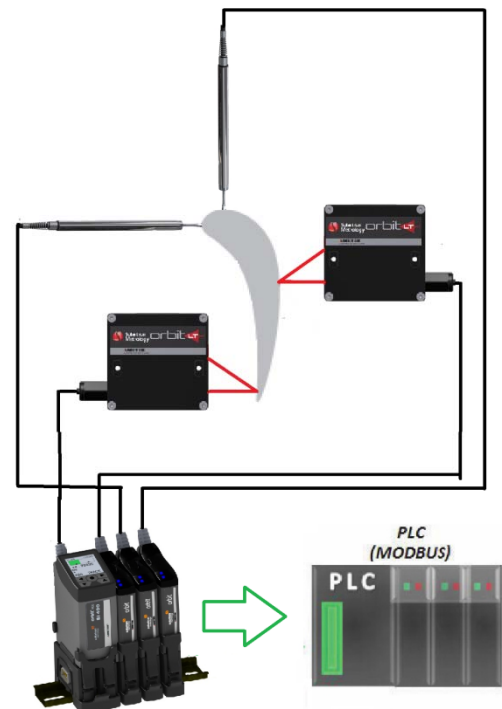
Modbus output (RTU or ASCII) over RS485 or RS232

Programmable discrete I/O (4 inputs, 3 outputs)

Track, Peak, and Max-Min Modes for each channel

24 VDC Power Supply

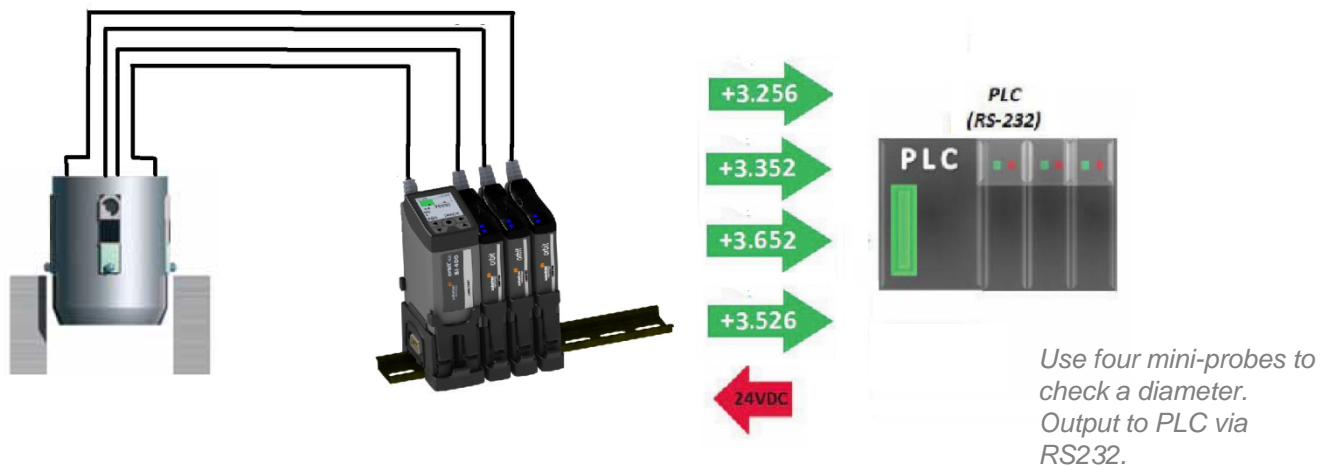
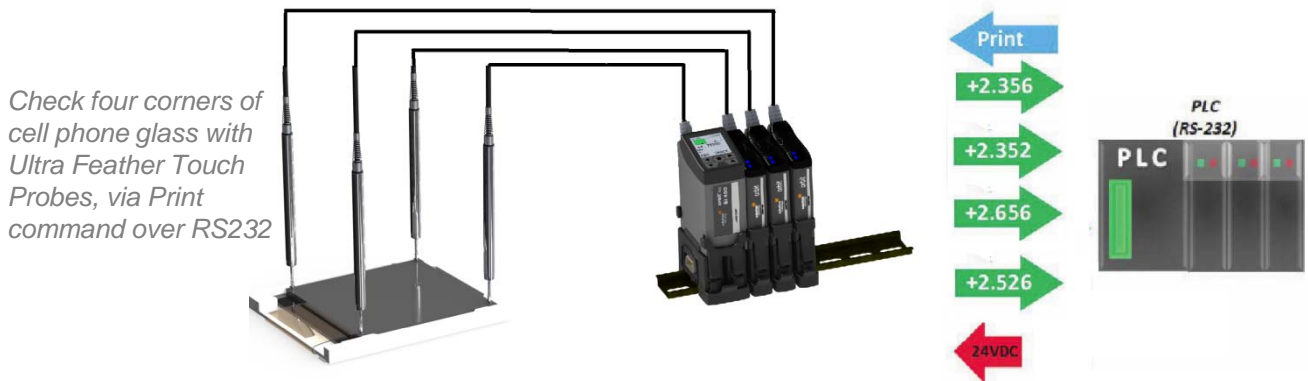
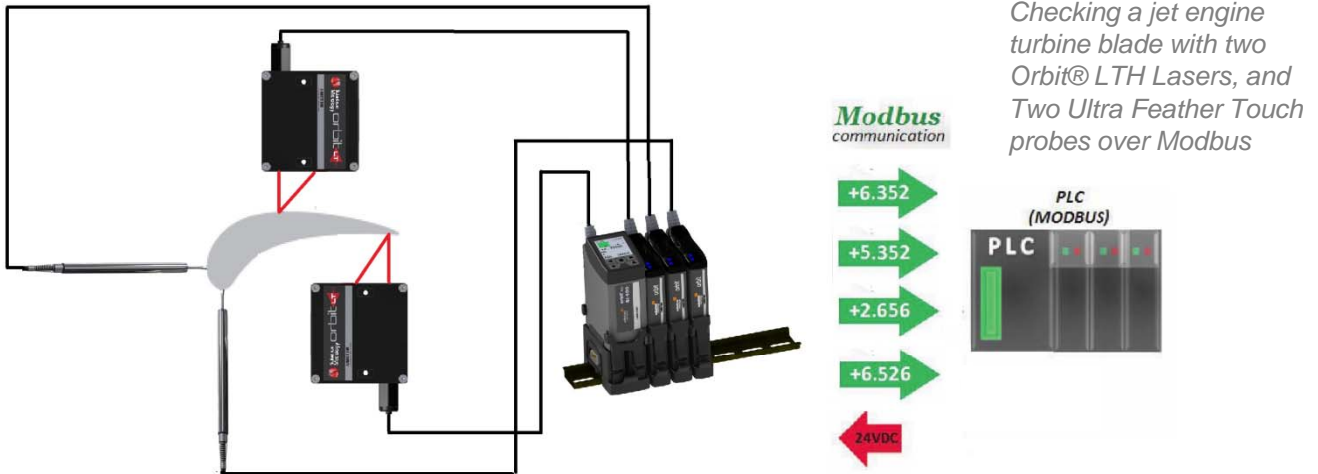
Works with Gauging Probes (all types), Displacement, Orbit<sup>®</sup> LT, and Orbit<sup>®</sup> LTH.



**Precision. Quality. Reliability**

[www.solartronmetrology.com](http://www.solartronmetrology.com) • [sales.solartronmetrology@ametech.com](mailto:sales.solartronmetrology@ametech.com)

## SI 400 Applications



## Pin Configuration

12	Input 4
11	Input 3
10	Input 2
9	Input 1
8	Output Supply In
7	Output 3
6	Output 2
5	Output 1
4	Modbus B (RS485 or RS232)
3	Modbus A (RS485 or RS232)
2	0V Power in Return
1	18-32 V DC Power In

Mini-USB Port for configuration via a PC and firmware updates



- Input pins can be set Active Hi or Active Lo
- Output pins can be Active Hi or Active Lo and set to NPN, PNP or Logic
- DIN Rail mount
- Input pins are programmable (typical functions: Zero, Print, Preset)

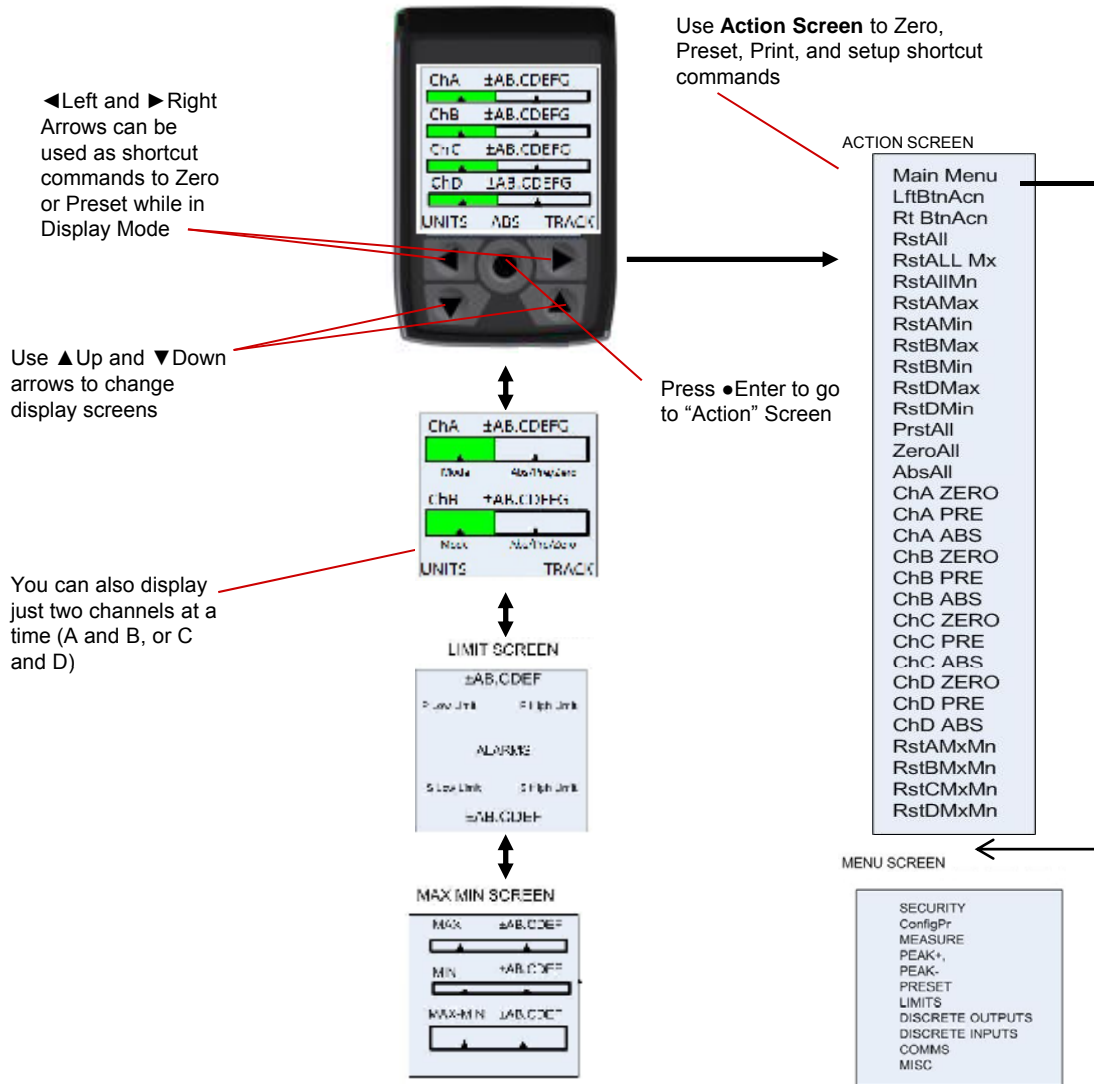
## Serial Output Options

The SI400 has a standard Modbus interface (RTU or ASCII). However, pins 3 & 4 can be configured as an ASCII serial interface. (Pin 3: RS232TX, Pin 4: RS232 RX). In this mode, the user can select from several different ASCII protocols, including compatibility with Solartron's SI1500, SI3500 and C55.

## Accessories

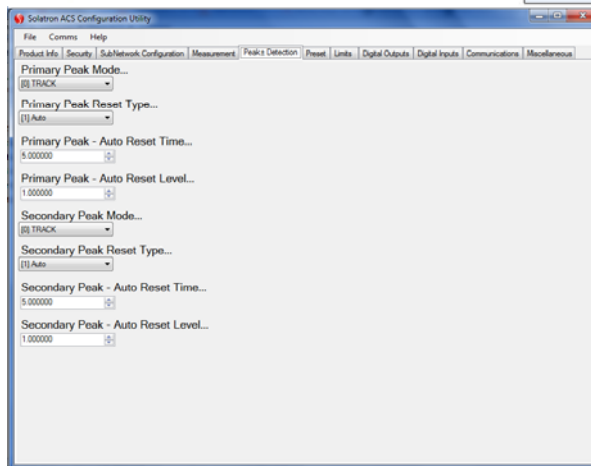
- +24 V Power Block with Mains Leads. Available with UK, EU, and US plugs
- Spare T-con Mounts
- USB to Mini-USB cable for PC connection

## Display and Interface



## Configurator Software

Connect SI400 to PC via Mini-USB to USB cable. Then use Solartron provided software to configure unit, and backup settings to PC file!



<b>Products</b>						
Spring Push Axial Cable	SI400P/1/S	SI400P/2/S	SI400P/5/S	SI400P/10/S	SI400P/20/S	SI400P10/2S
Spring Push Radial Cable		SI400PR/2/S	SI400PR/5/S	SI400PR/10/S	SI400PR/20/S	SI400PR10/2/S
Spring Push Axial Cable Feather Touch		SI400T/2/S	SI400T/5/S	SI400T/10/S	SI400T/20/S	SI400T10/2S
Spring Push Radial Cable Feather Touch		SI400TR/2/S	SI400TR/5/S	SI400TR/10/S	SI400TR/20/S	SI400TR10/2S
Pneumatic Axial Cable		SI400P/2/P	SI400P/5/P	SI400P/10/P	SI400P/20/P	SI400P10/2S
Pneumatic Radial Cable		SI400PR/2/P	SI400PR/5/P	SI400PR/10/P	SI400PR/20/P	SI400PR10/2/P
Pneumatic Axial Cable Feather Touch		SI400T/2/P	SI400T/5/P	SI400T/10/P	SI400T/20/P	SI400T10/2S
Pneumatic Radial Cable Feather Touch		SI400TR/2/P	SI400TR/5/P	SI400TR/10/P	SI400TR/20/P	SI400TR10/2S
<b>Measurement Performance</b>						
Measurement Range	1	2	5	10	20	2
Accuracy (% of Reading) (Note 1)	0.2	0.2	0.15	0.15	0.15	0.2
Repeatability (worst case) $\mu\text{m}$ (Note 2)	0.15	0.15	0.15	0.15	0.15	0.15
Repeatability (typical) $\mu\text{m}$ (Note 3)	0.05	0.05	0.05	0.07	0.07	0.05
Resolution ( $\mu\text{m}$ )	0.01	0.01	0.05	0.05	0.1	0.01
Pre Travel (mm)	0.15	0.15	0.15	0.15	0.15	0.15
Post Travel (mm)	0.35	0.85	0.85	0.85	0.85	8.85
Tip Force (N) at Middle of Range $\pm 20\%$						
Spring Push	0.7	0.7	0.7	0.7	0.7	0.7
Spring Push Feather Touch	0.3	0.3	0.3	0.3	0.3	0.3
Pneumatic at 0.4 bar	N/A	0.7	0.7	0.7	0.7	0.7
Pneumatic at 1 bar	N/A	2.6	2.6	2.6	2.6	2.6
Pneumatic Feather Touch $\pm 30\%$ at 0.3 bar	N/A	0.18	0.18	0.18	0.18	0.18
Pneumatic Feather Touch $\pm 30\%$ at 1 bar	N/A	1.1	1.1	1.1	1.1	1.1
Pneumatic Jet	N/A	0.85	0.85	0.85	0.85	0.85
Temperature Coefficient %FS/ $^{\circ}\text{C}$	0.01	0.01	0.01	0.01	0.01	0.01
<b>Environmental</b>						
Sealing for Probe	IP65 with gaiter or IP50 without gaiter					
Sealing for Probe Interface Electronics	Top and Front: IP41, Rear: IP20, In line connector: IP67					
Storage Temperature ( $^{\circ}\text{C}$ )	-20 to +70					
Probe Operating Temperature with Gaiter ( $^{\circ}\text{C}$ )	+5 to +80					
Probe Operating Temperature without Gaiter ( $^{\circ}\text{C}$ )	-10 to +80					
Electronics Operating Temperature ( $^{\circ}\text{C}$ )	0 to 60					
EMC Emissions	EN61000-6-3 and EN61326					
EMC Immunity	EN61000-6-2 and EN61326					
Power	18 to 32 VDC @ 0.07A typical					
<b>Material</b>						
Probe Body	Stainless Steel					
Probe Tip (options)	Nylon, Ruby, Silicon Nitride, Tugsten Carbide					
Gaiter (standard)	Fluoroelastomer					
Cable	PUR					
Electronics Module	ABS					
<b>Electronics Interface (Orbit ACS)</b>						
Alarm Outputs - selectable High, OK, Low	3 outputs either NPN, PNP, logic Programmable Active Hi or Lo					
Discrete Inputs - user selectable	4 inputs user configurable eg. Print, Zero, Preset					
Update Rate for I/O discretes (ms)	5					
Bandwidth of Electronics (Hz) - user selectable	460, 230, 115, 58, 29, 14, 7, 4					
Communications Interface Protocol	MODBUS (RTU or ASCII) or Solartron Serial Formats					
Communications Interface Hardware	RS485 or RS232 (User selectable) Up to 115,200 Baud					
Update Rate for Serial Data (ms)	25					
Note 1: Accuracy 0.1 $\mu\text{m}$ or % reading whichever greater						
Note 2: Obtained by repeated operation against a carbide target with side load applied to the bearing using max-min						
Note 3: Obtained by repeated operation against a carbide target standard deviation from average (68%)						

For specifications of other Gauging and Displacement Transducers, Orbit<sup>®</sup> LT, or Orbit<sup>®</sup> LTH, please refer to their respective datasheets.

[www.solartronmetrology.com](http://www.solartronmetrology.com) • [sales.solartronmetrology@ametec.com](mailto:sales.solartronmetrology@ametec.com)

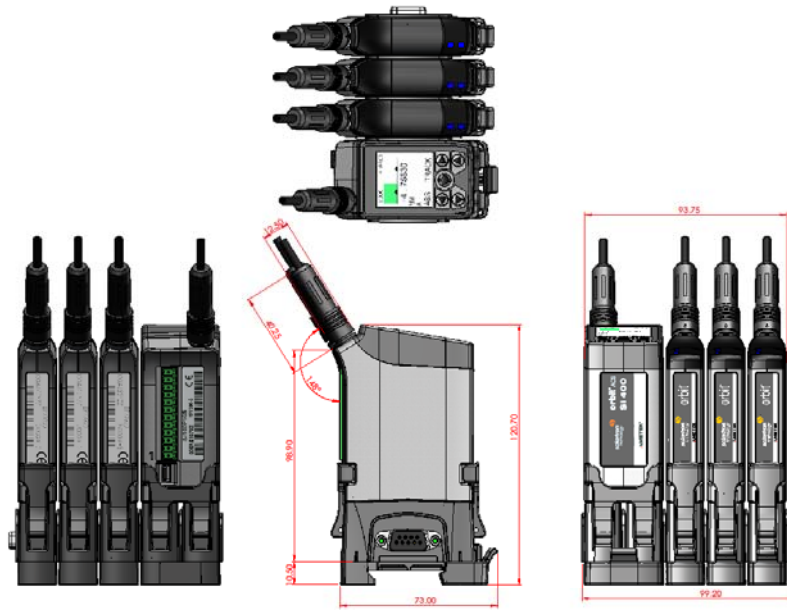
Instrument Functionality	
<b>Measurement</b>	
Measurement SI400	A, MAXA-MINA, B, MAXB-MINB, C, MAXC-MINC, D, MAXD-MIND,
Measurement Types	Track. Peak+, Peak -
Measurement Modes	Absolute, Zero (tare), Preset
Measurement Units	mm, inches, mils
<b>Display</b>	
Analogue SI400	Four Bars representing reading showing limits
Digital SI400	Four Digital up to 5 decimal places mm (6 for inches)
<b>Keypad</b>	
Type	Sealed Membrane

For Gauging probes, SI100 and SI200 can also be ordered with no plug for higher accuracy, or inline plug along cable  
 - Specs are for standard, plugged, gauging probes only. Specs will vary with other sensors. If considering another sensor, contact your local Solartron representative for details.  
 - Standard cable length is 2 meters. Special cable lengths can be ordered.

[www.solartronmetrology.com](http://www.solartronmetrology.com) • [sales.solartronmetrology@ametek.com](mailto:sales.solartronmetrology@ametek.com)



## Drawing



For 3D drawings, please contact [sales.solartronmetrology@ametek.co.uk](mailto:sales.solartronmetrology@ametek.co.uk)

**United Kingdom - Head Office**

Solartron Metrology  
Steyning Way  
Bognor Regis  
West Sussex  
PO22 9ST  
Tel: +44 (0) 1243 833333  
Fax: +44 (0) 1243 833322  
[Sales.solartronmetrology@ametek.com](mailto:Sales.solartronmetrology@ametek.com)

**France**

Solartron Metrology  
Rond-point de l'Espine des Champs  
Buroplus - Bat. D  
Elancourt 78990  
Tel: +33 (0)1 30 68 89 50  
Fax: +33 (0)1 30 68 89 59  
[france.solartronmetrology@ametek.com](mailto:france.solartronmetrology@ametek.com)

**Germany**

Ametek GmbH  
Solartron Metrology Division  
Rudolf-Diesel-Strasse 16  
40670 Meerbusch  
Tel: +49 (0) 2159 9136 500  
Fax: +49 (0) 2159 9136 505  
[vertrieb.solartron@ametek.de](mailto:vertrieb.solartron@ametek.de)

**Brazil**

Ametek do Brasil, Ltda  
Rod. Eng Ermenio de Oliveira Penteado, Km 57, SP75  
Bairro Tombadouro  
13337-300, Indaiatuba, SP, Brazil  
Tel: +55 19 2107 4126

**India**

Ametek Instruments India Private Limited  
1st Floor, Left Wing  
Prestige Featherlite Tech Park  
Plot #148, EPIP II Phase  
Whitefield, Bengaluru 560 066  
Karnataka, India  
Tel: +91 80 6782 3200  
Fax: +91 80 6782 3232

**USA**

Solartron Metrology  
USA Central Sales Office  
915 N.New Hope Road, Suite C  
Gastonia, NC 28054  
Tel: +1 800 873 5838  
Fax: +1 704 868 8466  
[usasales.solartronmetrology@ametek.com](mailto:usasales.solartronmetrology@ametek.com)

**China**

AMETEK Commercial Enterprise (Shanghai) Co. Ltd  
No. 1 AMETEK Road  
Ju Ting Economic Development Zone  
Shanghai 201615  
Tel: +86 21 5763 2509  
Fax: +86 21 5866 0969 Ext. 261/262  
[china.solartronmetrology@ametek.com](mailto:china.solartronmetrology@ametek.com)



**Solartron  
Metrology**

*Precision Driven*

Offices worldwide  
Agent and distributor details  
available at  
[www.solartronmetrology.com](http://www.solartronmetrology.com)



Q 09540

Solartron pursues a policy of continuous development. Specifications in this document may therefore be changed without notice.

**AMETEK**<sup>®</sup>  
ULTRA PRECISION TECHNOLOGIES

Precision. Quality. Reliability

[www.solartronmetrology.com](http://www.solartronmetrology.com) • [sales.solartronmetrology@ametek.com](mailto:sales.solartronmetrology@ametek.com)