

31st July 2024

Sole Supplier Letter

To Whom It May Concern: This letter is to confirm that the μ Carbs for CF part number 11103 is a sole source product, manufactured, sold and distributed exclusively by Sercon Limited. No division of Sercon Limited nor any other company, makes a similar or competing product.

M O'Connor

Mark O'Connor
Director

SerCon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe, CW1 6JT U.K.
Tel: +44 (0) 1270 580008

For and on Behalf of Sercon Limited.

Sercon Ltd

Unit 3B Crewe Trade Park
Gateway, Crewe, Cheshire
CW1 6JT United Kingdom

Phone: +44 (0)1270 580008
Email: info@sercongroup.com
www.sercongroup.com



To SERCON LIMITED UNIT 3B CREWE TRADE PARK GATEWAY CREWE CW1 6JT		Document Title Booking Confirmation	Issuing Office Manchester		
		Bill of Lading No. 125-57658812	Your Reference P024719		
Shipper AS To		Master Reference	Our Reference 8SE2401149		
		Date 22-May-2024			
Consignee UNIVERSITY OF HOUSTON 3507 CULLEN BOULEVARD RM 312 SCIENCE AND RESEARCH BUILDING HOUSTON TX USA		 Website : www.interspanfreight.com E-mail : info@interspanfreight.com Interspan Freight Solutions Ltd Unit J, Ashburton Point, Wheel Forge Way Manchester M17 1EH Phone : 01618480070  Company Reg. No. 3881695 VAT Reg. No. GB 748 3946 84 1921			
Container No./Trl No.	Place of Receipt CREWE				
Vessel/Flight AIRFREIGHT	Port of Departure MANCHESTER				
Port of Discharge HOUSTON	Place of Delivery HOUSTON TX 77204				
Date of Shipment/Arrival 25/05/24-25/05/24	Terms DELIVERED AT PLAC				
Marks & Numbers	Container Number	Number & Kind of pkgs	Description of Goods	Gross Weight (Kgs)	Measurement (M3)
ADDRESSED:- UNIVERSITY OF HOUSTON, 3507 CULLEN BOULEVARD RM 312, SCIENCE AND RESEARCH BUILDING, HOUSTON TX		2 X BOXES STC NON HAZ SCIENTIFIC EQUIPMENT		169.00	1.579
				Value	

B O O K I N G C O N F I R M A T I O N

THANK YOU FOR YOUR LATEST BOOKING PLEASE FIND HERewith THE SHIPPING DETAILS

HI JO
 AIR WAY BILL NUMBER: 125 - 57658812
 BOOKED ON A DIRECT FLIGHT TO HOUSTON
 FLIGHT NO: BA197 DEPARTS LONDON 25.05 - ETA HOUSTON
 AIRPORT IS SAME DAY, 25.05 LOCAL TIME 14:50

Yours faithfully,
 Chris McGuinness

PURCHASE ORDER

University of Houston

5000 GULF FREEWAY BUILDING 1 ROOM 205
HOUSTON TX 77204-5015
USA

SERCON LTD
UNIT 3B CREWE TRADE PARK GATEWAY
CREWE, CHESHIRE EAST CW1 6JT
GBR

Purchase Order 00730 - 0000052191	Date 02/08/2024	Revision	Page 1
Payment Terms Net 30	Freight Terms Destination	Ship Via COMMON	
Buyer 0163952 Dominguez,Randy		Fiscal year: 2024	

Ship To: 3507 CULLEN BOULEVARD ROOM 312
HOUSTON, TX,77204-5007
USA

Bill To: 3507 CULLEN BOULEVARD ROOM 312
HOUSTON, TX. 77204-5007
USA

Vendor: 0000173774 PO Type: Sole Source
Fax: Phone:

Contact:

Account	Fund	Dept ID	Program	Project	Bdgt Ref	Chartfield	Dist Amt	Location	PO ID
Line-achd	Item	Description		Quantity	UOM	PO Price	Extended Amt	Due Date	
58601	1121	H0109	B0415	R0506078	BP2024		80,640.00	H5007	0000058635
1 - 1		uCarbs Prep System for TILDA uCarbs for CF Autosampler optimised for isotopic analysis of carbonates and DIC via continuous flow IRMS		1.00	EA	80,640.00	80,640.00	02/08/2024	
58601	1121	H0109	B0415	R0506078	BP2024		13,178.40	H5007	0000058635
2 - 1		Installation and start up training at Customer's site		1.00	EA	13,178.40	13,178.40	02/08/2024	
52811	1121	H0109	B0415	R0506078	BP2024		3,600.00	H5007	0000058635
3 - 1		DELIVERED AT PLACE Excluding any local duties and taxes that may apply. 3,600.000 0.00 3,600.00		1.00	EA	3,600.00	3,600.00	02/08/2024	

Price per quote #17754

Department: Geoscience

UH Delivery Contact: Keshia Groggs, klgroggs@uh.edu, 713-743-6694

UH Invoicing Contact: Keah Walker, kcwalker@uh.edu, 713-743-6492

-UNIVERSITY OF HOUSTON INVOICING STANDARDS MUST BE FOLLOWED. THESE STANDARDS ARE LOCATED AT: www.uh.edu/purchasing AND CAN BE FOUND BY CLICKING ON VENDOR RESOURCES.

Total PO Amount

\$97,418.40

STATE SALES TAX EXEMPTION CERTIFICATE: Procurement process is authorized by Education Code 51.9335.
The undersigned claims an exemption from taxes under Chapter 20, Title 122A Revised Civil Statutes of Texas for purchase of
tangible personal property described in this numbered order, purchase from contractor and/or shipper listed above, as this
property is being secured for the exclusive use of the State of Texas.
University of Houston IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

File Copy

File Copy

Quotation

To: University of Houston Quotation
Department of Earth and Atmospheric Sciences
3507 Cullen Boulevard, Rm 328A
Houston, TX 77204

Quotation Date: 07/02/2024
Quotation Reference: 17754
Customer Ref:
Account Ref. ASM001
Quotation Validity: 15/03/2024

VAT No.

Quantity	Product Code	Product Description	Unit Price \$	Discount \$	Net Price \$
1	11103	uCarbs Prep System for TILDA uCarbs for CF Autosampler optimised for isotopic analysis of carbonates and DIC via continuous flow IRMS. Including dual needle XYZ autosampler, heated sample block, and automated, temperature controlled acid delivery 71107-5 uCarbs for CF start up kit	80,640.000	0.00	80,640.00
1	INST	Installation and start up training at Customer's site	13,178.400	0.00	13,178.40
1	WARR2	2 year warranty	0.000	0.00	0.00
1	DAP	DELIVERED AT PLACE Excluding any local duties and taxes that may apply.	3,600.000	0.00	3,600.00

This quotation is issued in USD Dollar

Total Net Amount \$ 97,418.40

Total VAT Amount \$ 0.00

Order Total \$ 97,418.40

* The price quoted does not include any local taxes or duties
See separate document for terms and conditions

Payment Details:-
50% with order, 40% on delivery and 10% installation
Payment is required within 30 DAYS of invoice date by bank transfer.
All bank transfer charges are the responsibility of the customer.

Sercon Bank Details:-
National Westminster Bank, 36 High Street,
Nantwich, Cheshire CW5 5GA U.K.

Sterling: IBAN: GB74NWBK54101736755133
Euro: IBAN: GB14NWBK60721013806831
US Dollar: IBAN: GB94NWBK60730113806556
BIC: NWBKGB2LXXX

PURCHASE ORDER

University of Houston

5000 GULF FREEWAY BUILDING 1 ROOM 205
HOUSTON TX 77204-5015
USA

SERCON LTD
UNIT 3B CREWE TRADE PARK GATEWAY
CREWE, CHESHIRE EAST CW1 6JT
GBR

Purchase Order 00730 - 0000053094	Date 07/26/2024	Revision	Page 1
Payment Terms Net 30	Freight Terms Destination	Ship Via COMMON	
Buyer 0163952 Dominguez,Randy		Fiscal year: 2024	

Ship To: 3507 CULLEN BOULEVARD ROOM 312
HOUSTON, TX,77204-5007
USA

Bill To: 3507 CULLEN BOULEVARD ROOM 312
HOUSTON, TX. 77204-5007
USA

Vendor: 0000173774 PO Type: Spot
Fax: Phone: Contact:

Account	Fund	Dept ID	Program	Project	Bdgt Ref	Chartfield	Dist Amt	Location	PO ID
Line-achd	Item	Description		Quantity		UOM	PO Price	Extended Amt	Due Date
53700	2091	H0109	B1023	NA	BP2024		6,500.00	H5007	0000059799
1 - 1		Installation and start up training at Customer's site - IN1332		1.00		EA	6,500.00	6,500.00	07/26/2024

Price per quote 18322

Department: Geoscience

UH Invoicing Contact: Keah Walker, kcwalker@uh.edu, 713-743-6492

-UNIVERSITY OF HOUSTON INVOICING STANDARDS MUST BE FOLLOWED. THESE STANDARDS ARE LOCATED AT: www.uh.edu/purchasing AND CAN BE FOUND BY CLICKING ON VENDOR RESOURCES.

Total PO Amount \$6,500.00

STATE SALES TAX EXEMPTION CERTIFICATE: Procurement process is authorized by Education Code 51.9335.
The undersigned claims an exemption from taxes under Chapter 20, Title 122A Revised Civil Statutes of Texas for purchase of tangible personal property described in this numbered order, purchase from contractor and/or shipper listed above, as this property is being secured for the exclusive use of the State of Texas.
University of Houston IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

File Copy

Quotation

To: University of Houston
3507 Cullen Boulevard, Rm 328A
Houston
Texas
77204-5007
USA

VAT Reg No: US

Quotation Date: 16/07/2024
Quotation Reference: 18322
Customer Ref:
Account Ref. UNI092
Quotation Validity: 16/08/2024

Quantity	Product Code	Product Description	Unit Price \$	Net Price \$
1	INST	Installation and start up training at Customer's site - IN1332	6,500.000	6,500.00

* The price quoted does not include any local taxes or duties
See separate document for terms and conditions

Delivery: within 90 days of receipt of order

This quotation is issued in USD Dollar

Total Net Amount \$ 6,500.00

Total VAT Amount \$ 0.00

Order Total \$ 6,500.00

Payment Details:-
50% with order, 50% on delivery
Payment is required within 30 DAYS of invoice date by bank transfer.
All bank transfer charges are the responsibility of the customer.

Sercon Bank Details:-
National Westminster Bank, 36 High Street,
Nantwich, Cheshire CW5 5GA U.K.

IBAN: GB94NWBK60730113806556
SWIFT/BIC: NWBKGB2LXXX

Invoice to:

University of Houston
3507 Cullen Boulevard, Rm 328A
Houston
Texas
77204-5007
USA

VAT Reg No: US

Customer Order No. 00730 - 0000052191

Invoice

Invoice No. 17754b

Invoice/Tax Date 23/05/2024

Due Date 23/05/2024

Account No. UNI092

Instrument No. IN1332

Quantity	Product Code	Product Description	Net Amount \$	VAT Rate %	VAT Amount \$
		uCarbs Prep System for TILDA			
1	11103	uCarbs for CF			
1	INST	Installation and start up training at Customer's site			
1	WARR2	2 year warranty			
1	DAP	DELIVERED AT PLACE			
		Total amount of order:	97,418.40		
		40% payable on delivery:	38,967.36	0.00	0.00
		10% payable on installation:	9,741.84	0.00	0.00

Delivery address:

Keshia Groggs
University of Houston
3507 Cullen Boulevard, Rm 312
Science and Research Building 1
Houston, TX 77204-5007
USA, FAO: Ny Riavo G. Voarintsoa

This invoice is issued in: USD Dollar

Total Net Amount	\$	48,709.20
Total VAT Amount	\$	0.00
Invoice Total	\$	48,709.20

Payment Details:-

Payment is required within 30 DAYS of invoice date by bank transfer.
All bank transfer charges are the responsibility of the customer.

Sercon Bank Details:-

National Westminster Bank, 36 High Street,
Nantwich, Cheshire CW5 5GA U.K.

IBAN: GB94NWBK60730113806556
SWIFT/BIC: NWBKGB2LXXX



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Pre-Installation Guide HS2022





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2. Introduction

This pre-installation guide is issued to help users prepare a site for the installation of Sercon instruments prior to the arrival of the installation engineer on site. The guide gives details of the system's bench space, electrical, environmental and gas requirements. Observing the site requirements will avoid delays during installation.

When all the requirements have been met, please complete and return the pre-installation survey to Sercon and an installation date will be confirmed.

3. Bench space

The table below gives the dimensions and weight of the HS2022, and inlets which may be associated

System	Width	Height	Depth	Weight
HS2022	820 mm	800 mm	610 mm	120 kg
EA	820 mm	800 mm	700 mm	100 kg
PyroEarth	820 mm	800 mm	700 mm	105kg
HT-EA	600 mm	570 mm	700 mm	80kg
GC	580 mm	500 mm	540 mm	50 kg
Orchid	500 mm	600 mm	570 mm	20 kg
Furnace controller	400 mm	400 mm	400 mm	20kg
Cryo Range	820 mm	550 mm	590mm	110 kg
μCarbs	720 mm	800 mm	600mm	100 kg
Aqua	720mm	800 mm	600mm	100 kg

The bench needs to be sturdy to support the weights shown above. Access to the back of the units is required, so please ensure that the benches are not against the walls. A minimum clearance of 50cm is required at the back of unit.

Additional space is required for the PC, monitor and printer.



4. Power Requirements

All mass spectrometers require a clean, stable source of power.

The system should be connected to a separate single-phase, continuous duty, 220-240 VAC, 48-62 Hz power line, with a maximum break of 10 ms. 1500 VA minimum service is required for the system.

110V compatible instruments can also be supplied.

In the case of a differing mains voltage, a transformer must be used.

Summary of power requirements of the HS2022, and inlets which may be associated

System	Power	Power Point
HS2022	0.8 kVA	1
PyroEarth	3.6 kVA	1*
EA	1.5 kVA	1
HT-EA	3.0 kVA	1*
GC	3.0 kVA	1
Orchid	1.0 kVA	1
Furnace controller	0.8 kVA	1
Cryo Range	0.8 kVA	1
μCarbs	2.5 kVA	2
Aqua	2.5 kVA	2

**16A power supply.*



In situations where power breaks may exceed 10 milliseconds, a UPS is required. A UPS also helps to smooth out the power supply if it is not particularly stable. Please contact Sercon for information on suitable UPS units.





5. Environmental Requirements

5.1 Room temperature

The permissible temperature range is 17°C - 30°C.

Approximately 20°C is preferable with temperature variations of less than ± 2 °C/ hour.

5.2 Humidity

The relative humidity must not be lower than 20% and not exceed 70% at any temperature.

The optimum relative humidity level is 40%-60%.

5.3 Air conditioning

We recommend the installation of air conditioning, if the specified limits will be frequently exceeded on account of unfavourable climatic conditions. Direct sunlight on the system should be avoided.

Please ensure that the air-conditioning unit is not blowing across the electromagnet.

6. Gases

The system requires gas cylinder connections with 1/8" compression fittings (Swagelok or similar) and 1/8" diameter GC grade stainless steel or copper tubing for all gases (except the compressed air). The length of the tubing will be entirely dependent upon where your gas bottles are located in the lab. This should ideally be kept to a minimum. Standard 2-stage regulators that are capable of delivering a pressure of at least 3.5 Bar are required.

A 1/8" Swagelok Tee Union is required for splitting the helium (and hydrogen for the GC, if used). Additional Tee unions are needed to split the helium for additional inlets, unless connections are provided on the bench for each one.

Helium

Carrier gas. 99.998% with 10vpm or less of N₂.

A large (10 m³) cylinder should last at least 6 weeks.

Oxygen

Required for combustion and re-oxidising catalysts in some inlets.



99.998% with 0.5 - 5vpm or less of N₂.

A large (10 m³) cylinder should last several years under normal operating conditions.

Reference Gases

The HS2022 mass spectrometer is fitted with a reference gas injector system. Appropriate reference gases should be available for the samples you are interested in - CO₂, N₂, H₂, etc. These should be of high purity – 99.99%. Please check the Gas Requirement Check List at the end of this document

Compressed Air

A compressed air supply of 50 – 60 psi (approx. 3.5 Bar) is needed for pneumatic solenoid operations. This can be from a compressor or gas bottle. Alternatively, the valves can be operated using the helium supply but this will increase helium consumption. The compressed air is connected to the instruments by 1/8" nylon tubing.

For additional inlet-specific gases please see the Gas Requirement Check List at the end of this document

7. Installation and Service

7.1 Instrument Arrival

When the instrument arrives, please make an immediate visual inspection for damage. If any damage is apparent, please take the following steps:

- Note the nature and extent of the damage, including photographs
- Request an inspection and written damage report from a representative of the carrier to signify their concurrence with your observation.
- Contact Sercon and report the damage.

Caution:

Damage discovered 15 days after delivery of the equipment generally cannot be recovered. Such damage will be at the expense of the customer.

If the delivery receipt indicates that material has been received in apparent good order and condition and no exceptions are taken, Sercon will not accept liability for damage



7.2 Moving the equipment

Do not drop or mishandle the shipping containers. The equipment should be left in the shipping crates and, upon delivery, be taken by a forklift or a hydraulic pallet mover to the installation site.

7.3 Installation

When the instrument is on site and ready for installation, please contact Sercon who will arrange for an engineer to install it if arrangements have not already been made.

During the installation, the engineer will train the customer in the fundamentals of mass spectrometer operation and routine maintenance as well as application and software training. To receive maximum benefit from this onsite training opportunity, the instrument operator(s) should be available during the entire installation.

Additional training courses are available at our factory - please contact us for details.

8. Reference Materials

The HS2022 measures stable isotope abundances in your samples and compares them to reference materials of known isotopic composition. We suggest that you obtain a variety of suitable working reference materials, which can then be used to calibrate your instrument.

An effective reference compound is one that closely matches your samples in both elemental composition and isotopic enrichment.

Sercon is a supplier of reference materials. Please see https://serconlimited.com/sercon_systems/standards/

9. Consumables for Elemental Analyser Systems

New systems are supplied with appropriate start-up kits to allow system specification tests during installation. Further consumable supplies are available from Sercon. Please contact consumables@sercongroup.com or browse our online catalogue at sercon-consumables.com





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Pre-Installation Guide HS2022

10. Pre-Installation Survey

To ensure an efficient, trouble-free, installation of your Sercon instrument, could you please complete the attached questionnaire.

Simply answer each of these brief questions to confirm compliance with the pre-installation requirements, and return to service@sercongroup.com





Pre-Installation Checklist

- | | |
|---|-------------------------------------|
| 1. Bench and storage space is sufficient | ☒ |
| 2. Main power 110V or 220-240V | ☒ |
| 3. There are enough electricity plugs for the system | ☒ |
| 4. Room temperature and humidity is adequate | ☒ |
| 5. Gases, regulators & connecting tubing are on site | ☒ |
| 6. All relevant safety precautions are complied with | ☒ |
| 7. Sercon instrument has arrived on site | ☒ |
| 8. Sercon instrument has been inspected for shipping damage | ☒ |
| 9. System moved to installation site | ☒ |

Gas Requirement Check List for Sercon Instruments

Please check you have all of the required gases necessary for analysis using the table for the inlets you have ordered.





Gas	Grade	Use	
HS2022			
Helium	99.998	Carrier	☐
Nitrogen	99.999	Tuning / Stability / ref gas	☐
Carbon dioxide	99.999	Tuning / Stability / ref gas	☐
Hydrogen	99.999	Tuning / Stability / ref gas	☐
PyroEarth			
Helium	99.998	Carrier	☐
Oxygen	99.998	Combustion	☐
Compressed Air		Solenoid Operation	☐
EA			
Helium	99.998	Carrier	☐
Oxygen	99.998	Combustion	☐
Compressed Air		Solenoid Operation	☐
HT-EA			
Helium	99.998	Carrier	☐
Compressed Air		Solenoid Operation	☐
GC-CP			
Helium	99.998	Carrier	☐
Oxygen	99.998	Oxidation of combustion tube	☐
Synthetic Air [Zero Grade]	20% O ₂ / 80% N ₂	Flame Ionization Detector	☐
Hydrogen	99.999	Flame Ionization Detector	☐
Liquid Nitrogen		If N ₂ combustion option selected	☐
Cryo Range			
Helium	99.998	Carrier	☐
Oxygen	99.998	Oxidation of combustion tube	☐
μCarbs***			
Helium	99.998	Carrier	☐
Aqua			
Helium	99.998	Carrier	☐
Carbon dioxide	99.999	Equilibration Gas**	☐
Hydrogen	99.999	Equilibration Gas**	☐

*** Phosphoric acid is required for carbonate / DIC measurements

**Pure H₂ and CO₂ can be used for the equilibration of water samples but may affect the results of smaller water samples (<100μL). 5% gases (i.e. 5% H₂ or CO₂ in helium) are preferable for smaller samples and give more manageable sample sizes in general. The use of 5% gases is recommended but is at the customer's discretion.





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Pre-Installation Guide HS2022





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Pre-Installation Guide HS2022

Contact Name:	Ny Riavo Voarintsoa	
Customer Name:	Ny Riavo Voarintsoa	
Address:	3507 Cullen Blvd, SR1, Room 205	
Univ. of Houston, Dept EAS		
Houston , TX 77204		
Tel No:	+1-832-380-9011	Email: ngvoarin@central.uh.edu
Fax:		
Date of delivery:	June 6th, 2024	
Customer Signature	<i>Ny R. Voarintsoa</i>	
Date:	August 5th, 2024	

Please return to service@sercongroup.com





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Pre-Installation Guide HS2022

Service/ Maintenance email support: service@sercongroup.com

Sales: sales@sercongroup.com

Website: www.sercongroup.com

Telephone: +44 (0) 1270 580 008

Fax: +44 (0) 1270 252 310

Sercon Ltd,
Unit 3B,
Crewe Trade Park,
Gateway,
Crewe, CW1 6JT.
UK.

Tel No : +44 (0)1270 580008

Fax No : +44 (0) 1270 252310



COMMERCIAL INVOICE

Date: 23/05/2024

Customer 00730 - 0000052191

Reference:

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade Park
Gateway
Crewe
CW1 6JT
UK

Contact: Joanne O'Connor
Tel: +44 (0) 1270 580008
Invoice 17754 IN1332
Reference:

Country of Export: UK
Country of Manufacture: UK
Country of Destination: US United States

Delivery Address:

University of Houston
3507 Cullen Boulevard, Rm 312
Science and Research Building 1
Houston, TX 77204-5007
USA
FAO: Ny Riavo G. Voarintsoa

Contact Name: Keshia Groggs
Cust Tel Number: 713 743 6694

Shipping Marks /

1 Box @ 100x85x107cms GW: 110kg Box 2 @
95x84x84cms GW: 59kg

UK Commodity Code: 90273000

Quantity	Product Code	Product Description	Amount \$
		uCarbs Prep System for TILDA	
1	11103	uCarbs for CF	80,640.00
1	INST	Installation and start up training at Customer's site	13,178.40
1	WARR2	2 year warranty	0.00
1	DAP	DELIVERED AT PLACE	3,600.00

SerCon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe, CW1 6JT U.K.
Tel: +44 (0) 1270 580008

None of the goods contained in this consignment
are restricted by IATA or shipping regulations

Total Invoice
Value: \$ 97,418.40

Signed *Jo O'Connor*

11 – Installation Report

Client:	University of Houston		
Quotation Number:		Date:	
Job Number:	IN1332	Date:	

Contact:	Ny Riavo G. Voarintsoa		
Date of Visit:	21st October 2024	No. of Days:	5
Engineer:	James Hanson		

Details of visit:

Day 1 – System unpacked and placed on bench, gases connected but pressure regulators too low rated, need replacing with 50PSI + rated ones. Comms established to sampler and uCarbs. Heated block heating up but channels the wrong way round, power cable and tc cable swapped into the controller box to resolve. Combustion furnace in temps folder is left side. GC box temp driven, flow meter working fine. Nitrogen used as the carrier gas, flow meter a little incorrect with scale – 10ml real flow is reading 15ml and 45ml real flow is reading as 55ml.

Day 2 – Needle injection depth changed from 110mm to 94mm. Flush flow measured as 20ml and carrier flow measured at 45ml. Acid needle damaged by JH, new one needs sending out FOC but replaced with spare on site now. Spoken to customer about the analyser system, continuous flow inlet to analyser not possible. Idea to add some 3 way venting valves into the system to create a controllable continuous flow up until the entry to the TILDAS sample chamber. Trigger system needs figuring out, Aerodyne engineers on the case for them and solution from Sercon pending.

Day 3 – Trigger wiring made using J21 connection to PCB and pins 16 and 4 need to short to trigger. Callisto version does not work with trigger so needs updating. Direct comms shows trigger working on EROE command.

Day 4 – New Callisto version added, trigger works perfectly. System repiped to include 3 way valve as close to sample inlet valve as possible to sample chamber. 3 way valve added to top of control box to allow venting immediately after the output of the box. Gas flow piped to 1 and top connection venting on both valves. Wired into v6 and v7 positions. V11 output usually to water trap and GC column bypassed to connect to inlet to flow sensor. Approx 10 inches of 30' pipe used. Approx 2m of pipe used between the end of the system valve and inlet to TILDAS. 3 way valve connected asap after outlet of control box flow. As short as possible volume between TILDAS entry valve and 3 ay vent valve at the end of the sample path. Gas flow speed calculated to flush atmosphere in front of sample when flushing into vial for 2 seconds, then venting valve closes to pressurise sample up to the TILDAS and then 3 way valve on the top of the control box closes to trap pressurised volume. Then once sample has been sucked into the sample chamber under vacuum the desired pressure of 285 torr is hit and the sample chamber will close, then the vent valve at the end of the line can open to vent all the way through and the sample is finished. Autosampler inject and uninject timings changed to suit. Screenshots available. Theory of new application tested with gas injected into vials and confirmed to work. Acidification and flushing tested and working, samples prepped overnight. Optimal timings found for valve triggering for consistent results and pressure.

Day 5 – Conversation with Aerodyne engineer regarding trigger requirements. Events finalised and mock triggered run completed and successful. Triggering timing and subsequent Sercon timing needs finalising at a later date once the trigger can work. Trigger wired in and terminated with spare cable to connect. CO2 reliably being sent to the TILDAS at the target pressure required. 1mg way too much CaCO3 needed for TILDAS sensor but shows huge CO2 signal. Smaller consistent CO2 signal squired using gas injection into vial tiny volume of pure CO2.

Training provided covering system overall function and automation, flushing and acid dose and carbonates methods. versa control. components. event changes.

11 – Installation Report

Client:	University of Houston		
Quotation Number:		Date:	
Job Number:	IN1332	Date:	

Recommendations:

Get trigger code and components from Aerodyne to confirm function and then work out final trigger timing.

Faults and Shortages:

Missing 4 x 25g Magnesium Perchlorate (NOT REQUIRED – REFUND?)

Acid Needle broken by JH – Replacement FOC needs sending.

Gas needle incorrect replacement provided – Replacement FOC needs sending once confirmed type.

Follow up:

Send Quote for;

SI0703 - 1/8 – 1/16 PTFE Reducing Ferrule (Pack of 10)

SI1900 – Dowty Washers – (x4)

SI1899 – 1/16th Fittings – (x4)

SI2515 x1 Acid Needle FOC

SI1241 – 3 Port Solenoid Valve (x2)

GAS SAMPLE NEEDLE TYPE TO BE CONFIRMED – FOC

Find time for remote session to finalise trigger timing once provided by Aerodyne.

Engineer: James Hanson

Date: 25th October 2024

Signed:

James Hanson

12 – Installation Acceptance and Warranty Certificate

Client:	University of Houston		
Quotation Number:		Date:	
Job Number:	IN1332	Date:	

Contact:	Ny Riavo G. Voarintsoa
System:	uCarbs – Interfacing with TILDAS
Software:	CFIRMS v50.0.1
Engineer:	James Hanson
Installation Date:	25 th October 2024

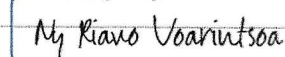
Warranty commences:	25 th October 2024
Warranty Expires:	24 th October 2026

Customer Acceptance:

Name: _____

Signature: _____

Date: _____

DocuSigned by:

 2A06489C78D94BD...

Engineer's Signature:

On behalf of Sercon Limited

Name: James Hanson

Signature: 

Date: 25th October 2024

Notes:

Order Date 12/02/2024
Order Ref. 17754
Cust. Ref. 00730 - 0000052191
Account Ref. UNI092

Order Acknowledgement

Invoice address

University of Houston
3507 Cullen Boulevard, Rm 328A
Houston
Texas
77204-5007
USA

VAT No.

Delivery address

University of Houston
3507 Cullen Boulevard, Rm 328A
Houston
Texas
77204-5007
USA

Contact: Keshia Groggs
Tel: 713 743 6694

Quantity Ordered	Product Code	Product Description	Unit Price \$	Net Price \$
uCarbs Prep System for TILDA				
1	11103	uCarbs for CF Autosampler optimised for isotopic analysis of carbonates and DIC via continuous flow IRMS. Including dual needle XYZ autosampler, heated sample block, and automated, temperature controlled acid delivery	80,640.000	80,640.00
1	INST	71107-5 uCarbs for CF start up kit Installation and start up training at Customer's site	13,178.400	13,178.40
1	WARR2	2 year warranty	0.000	0.00
1	DAP	DELIVERED AT PLACE Excluding any local duties and taxes that may apply.	3,600.000	3,600.00

Total Net Amount \$ 97,418.40
Total VAT Amount \$ 0.00
Order Total \$ 97,418.40

Notice of Invoicing Standards from the University of Houston

In accordance with Texas Government Code, Chapter 2251 (prompt payment law), and related rules issued by the Texas Building and Procurement Commission, the University of Houston has established the invoicing standards listed below. All invoicing standards must be followed or the invoice will be returned to the vendor for correction immediately and no later than twenty-one (21) calendar days after it was received.

1. Invoices must be mailed, faxed or emailed by the vendor to the address indicated on the University's purchase order, contract or other University document provided to the vendor.
2. Invoices must include the following information:
 - a. Vendor's mailing (remit to) address for payment.
 - b. Vendor's mailing address for correspondence.
 - c. Vendor's phone number, fax number and/or email address of representative who can answer questions regarding the invoice.
 - d. University's purchase order, contract or other document number.
 - e. Name and mailing (ship to) address of the University department that received the goods or services, as indicated on the purchase order or contract.
 - f. Vendor's Texas Identification Number (TIN) issued by the Comptroller of Public Accounts.
 - g. Description of the goods delivered or services rendered, in sufficient detail to identify them as the same goods/services on the purchase order or contract.
 - h. Information identifying and supporting a successor organization to the original vendor, if necessary, with sufficient information to make payment to the successor organization.
3. Invoices may not include the following:
 - a. Payment terms that are different than those specified in the purchase order or contract.
 - b. Goods that have not been delivered to the University or services that have not been completed, unless the purchase order or contract contains a provision for advanced payment.
 - c. Unit prices or quantities, or total price or quantity, that exceed those indicated in the purchase order or contract.
 - d. Charges for goods, services or shipping that were not included on the purchase order or contract.
 - e. Taxes or fees from which the University is exempt as a non-profit, Texas institution of higher education.
 - f. Charges for late payment interest. Vendors must follow a separate procedure to request payment for interest that is believed to be owed, but not paid, by the University at the time of a suspected late payment.
4. Unless otherwise indicated in the purchase order or contract, payment is due thirty (30) days after the later of:
 - a. The date a complete and correct invoice is received, in accordance with the standards above.
 - b. The date goods are received, in accordance with the purchase order or contract.
 - c. The date services are completed, in accordance with the purchase order or contract.

Vendors who have questions about the University of Houston's invoicing standards should call the Accounts Payable Department at (713) 743-8700.

MASTER AWB No. 125 MAN 5765 8812				CUSTOMS REF: 4665324333000-ME10503				HAWB No. ME10503										
Shipper's Name and Address SERCON LIMITED UNIT 3B CREWE TRADE PARK GATEWAY CREWE CW1 6JT, UNITED KINGDOM GB771110074000. T: +441270580008				HOUSE AIR WAYBILL (Air Consignment Note) Issued by  INTERSPAN FREIGHT SOLUTIONS LIMITED TRAFFORD PARK MANCHESTER M17 All business whatsoever is carried out subject to the Company's Conditions of Trading. Copies available on request if not set out overleaf. Copies 1,2 and 3 of the Air Waybill are originals and have the same validity.														
Consignee's Name and Address UNIVERSITY OF HOUSTON, 3507 CULLEN BOULEVAR RM 312, SCIENCE AND RESEARCH BUILDING 1 HOUSTON, TX 77204, U.S.A. CTC: KESHIA GROGGS TEL: +1 713 7436694. FAO NY RIAVO G VOARINTSOA EMAIL: KLGROGGS@CENTRAL.UH.EDU																		
Issuing Carrier's Agent Name and City INTERSPAN FREIGHT SOLUTIONS LIMITED TRAFFORD PARK MANCHESTER M17 91-4 7043/0015 Place of departure and requested Routing MANCHESTER																		
To LHR		By first Carrier BRITISH AIRWAYS		Routing and Destination		To IAH	By BA	To	By	Currency GBP	Wt. PPD COL PP COL		Other PPD COL PP COL		Declared Value for Carriage NVD		Declared Value for Customs NCV	
Place of Destination HOUSTON				Flight/Date BA3941/23		Flight/Date BA197/25		Amount of Insurance XXX				INSURANCE - If Shipper requests insurance in accordance with issuers conditions indicate amount to be insured in figures in box marked "Amount of Insurance"						
Handling Information (Including Marks or Numbers on packages and method of packing) TWO (2) BOXES ADDRESSED / DOCUMENTS ATTACHED INCOTERMS: DAP																		
X																		
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item		Chargeable Weight	Rate Charge		Total		Nature and Quantity of Goods (incl. Dimensions or Volume)								
2	169	K			264	A S		A G R E E D		SCIENTIFIC EQUIPMENT - NOT RESTRICTED VOL WEIGHT: 264 kgs 1 CARTON @ 100 X 85 X 107 CMS 1 CARTON @ 95 X 84 X 84 CMS								
LIFT GATE DELIVERY REQUIRED																		
2	169	K						AS AGREED										
Prepaid		Weight Charge		Collect		It is agreed that the goods herein are accepted subject to issuer's conditions of contract. If the carriage involves An ultimate destination or stop in a country other than the country of departure, the Warsaw Convention may be applicable and Convention governs and in most cases limits the liability of carriers in respect of loss of damage or delay to cargo. Agreed shipping places (other than the place of departure or destination) detailed under "Routing" and / or those places shown in the timetable of any carriers performing carriage hereunder as scheduled stopping places for the route.												
AS AGREED																		
Total Other Charges Due Agent						Shipper certifies that the particulars on the face hereof are correct INTERSPAN FREIGHT SOLUTIONS LTD												
AS AGREED																		
Total Other Charges Due Carrier						Signature of Shipper or his Agent												
AS AGREED																		
Total Prepaid						Total Collect						AS AGENT FOR THE CARRIER: BRITISH AIRWAYS 23-MAY-24 MANCHESTER Executed on (date) at (place)						
AS AGREED																		
Currency Conversion Rates						CC Charges in Dest. Currency												
												LEE FARRAR Signature						

Packing List

Customer Reference: 00730 - 0000052191

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1332

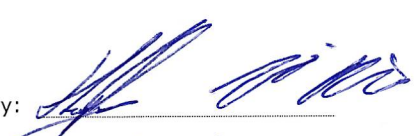
Consignee:

University of Houston
3507 Cullen Boulevard Room 312
Houston, TX, 77204-5007
USA

Contact Name: Keshia Groggs
Contact Tel Number: 713 743 6694

BOX: 1

Quantity	Product Code	Product Description	Serial Number: <i>if available</i>
☒ 1		VERSA	60101/3-2024/1332
☒ 1		Versa needle	

Packed by: 

Date: 21/05/24

Claims for damage or shortages must be made within 3 days

Packing List

Customer Reference: 00730 - 0000052191

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1332

Consignee:

University of Houston
3507 Cullen Boulevard Room 312
Houston, TX, 77204-5007
USA

Contact Name: Keshia Groggs
Contact Tel Number: 713 743 6694

BOX: 2

Quantity	Product Code	Product Description	Serial Number: if available
☒ 1	11103	ORCHID CF	11103/05-2024/1332
☒ 1	SI2918	PC, (USA mains cable inside)	
☒ 1	SI2391	Monitor, (USA mains cable inside)	
☒ 1	71107-5	uCards for CF start up kit	
☒ 1		Versa power supply and USA mains cable	
☒ 1	SI2510	ORCHID CF USA mains cable	
☒ 1		Glass beaker	
☒ 1		Software back up USB inside PC box	
☒ 1		Windows recovery USB inside PC box	
☒ 1		Electronic Manuals on software back up drive.	

Packed by:



Date:

21/05/24

Claims for damage or shortages must be made within 3 days

Quotation

To: Asmatek LLC
 Houston, TX 77096
 USA

Quotation Date: 07/02/2024

Quotation Reference: 17754

Customer Ref:

Account Ref. ASM001

VAT No.

Quotation Validity: 15/03/2024

Quantity	Product Code	Product Description	Unit Price \$	Discount \$	Net Price \$
uCarbs Prep System for TILDA					
1	11103	uCarbs for CF Autosampler optimised for isotopic analysis of carbonates and DIC via continuous flow IRMS. Including dual needle XYZ autosampler, heated sample block, and automated, temperature controlled acid delivery	80,640.000	0.00	80,640.00
		71107-5 uCarbs for CF start up kit			
1	INST	Installation and start up training at Customer's site	13,178.400	0.00	13,178.40
1	WARR2	2 year warranty	0.000	0.00	0.00
1	DAP	DELIVERED AT PLACE Excluding any local duties and taxes that may apply.	3,600.000	0.00	3,600.00

This quotation is issued in USD Dollar

Total Net Amount \$ 97,418.40

Total VAT Amount \$ 0.00

Order Total \$ 97,418.40

* The price quoted does not include any local taxes or duties
 See separate document for terms and conditions

Payment Details:-
 50% with order, 40% on delivery and 10% installation
 Payment is required within 30 DAYS of invoice date by bank transfer.
 All bank transfer charges are the responsibility of the customer.

Sercon Bank Details:-
 National Westminster Bank, 36 High Street,
 Nantwich, Cheshire CW5 5GA U.K.

Sterling: IBAN: GB74NWBK54101736755133
 Euro: IBAN: GB14NWBK60721013806831
 US Dollar: IBAN: GB94NWBK60730113806556
 BIC: NWBKGB2LXXX