



ROM Quotation 2333

Manufacture of Pupil Plane Combiner

**Astrophysics Group Cavendish Laboratory
Julien Coyne**

**Prepared by
Dr K Pietraszewski**

5 March 2007

Table of Contents

1	Introduction.....	3
2	Applicable Documents.....	3
3	Components to be Manufactured.....	4
3.1	Mirrors.....	4
3.2	Spacers.....	4
3.3	Infrasil 301 Components.....	4
4	Coatings.....	5
4.1	Mirror Reflectors.....	5
4.2	Beam Splitter Coating.....	5
4.3	Anti-Reflection Coatings.....	5
4.4	Compensation Coating.....	6
4.5	Summary of coating specifications offered.....	6
5	Assembly.....	6
5.1	Documentation.....	7
6	ROM Budgetary Quotation.....	7
6.1	Schedule.....	7
6.2	Milestone Payments.....	7
7	Isometric Sketch of Pupil Plane Combiner.....	8
8	CONDITIONS OF SALE.....	9

1 Introduction

This document presents the budgetary estimate for the manufacture of the pupil plane combiner.

2 Applicable Documents

AD1 M001 – Pupil Plane Combiner – Slab and Spacer Requirements, Rev 3.1
 21/11/06.

3 Components to be Manufactured

This section gives a brief description of the components to be manufactured. The baseline design considered here is the configuration described as (2,1,2) in AD1.

3.1 Mirrors

Two mirrors are required for the assembly. These are full surface reflector mirrors and therefore can be made from either Zerodur or any grade of Fused Silica. Zerodur may be preferable to silica as it will have the same thermal properties as the spacers. The mirrors will be polished to a flatness of $\lambda/10$ (at 633nm) or better.

3.2 Spacers

The spacers will be made of expansion grade 2 Zerodur. It is proposed that spacer segments are to be made identical so that their length, (that defines the separations) are also identical.

In AD1 the nominal separation of the '1' state is 87mm and this will form the length to which all the spacer will be made.

The thickness and width of the spacers should be sufficient to support all the components and the final dimensions are TBD. For the purposes of this ROM estimate it is assumed that the spacers are a nominal 100mm in width, sufficient to support the two mirrors along all or most of their length.

It is further proposed that the spacers support the mirrors both top and bottom giving a box structure that will maintain the dimensional stability of the system.

These spacer units will also be used to separate the two Infrasil 301 components as shown in the isometric sketch of the system in section 7.

The spacers will be polished to a parallelism of $\lambda/10$ or better at 633nm. In order that the spacers are all identical i.e. of equal length and parallelism they will be polished using techniques developed for the manufacture of solid etalons.

3.3 Infrasil 301 Components

Two identical Infrasil 301 plates are to be made for the beam splitter and compensator optics. Infrasil 301 is required as its 3d properties allow the beam incident at 15° to be transmitted with minimum distortion due to material inhomogeneity.

The beam splitter and compensator block will be polished to give a minimum point to point variation in optical path and flatness of surfaces to $\lambda/10$ or better at 633nm and will be made using solid etalon manufacturing techniques. This will best ensure that the phase difference introduced by the Infrasil 301 components are constant.

4 Coatings

The coatings required for this instrument cover the wavelength range 1100nm to 2400nm and are described in detail in the following sections.

4.1 Mirror Reflectors

For the (2,1,2) configuration shown in AD1 full reflector coatings are required on the two mirrors and on a small region of the Infrasil compensator plate. Dielectric coating materials used to produce broadband coatings are not suitable to make a reflector that covers the full wavelength band required.

It is therefore proposed to deposit a protected silver coating. This coating will operate over the full range of wavelengths and will have an easily predictable reflectance phase. The specification of the reflector summarised in the table below. Since this coating is to be applied to three surfaces or areas on separate components all the parts can be coated at the same time. This will reduce the cost of coatings and ensure the coating is identical on each component (to within the distribution tolerances of coating chamber) and simplify the phase analysis.

4.2 Beam Splitter Coating

The first Infrasil 301 plate forms the beam splitter and operates at an angle of incidence of 15°. The broad wavelength range required for this coating dictates that Zinc Sulphide and Cryolite dielectric materials are to be used. These are classic soft coating materials that do not strain the substrate surface and it is necessary to handle these coatings with great care as they are fragile. The advantage of these coatings is that they will have visible harmonics, regions of good reflectance for visible wavelengths, which will allow testing at visible wavelengths.

The broad band nature of the system requires that the beam splitter be a highly optimised multi-layer stack design. Highly optimised designs are sensitive to layer thickness tolerances that results in a potentially broad tolerance range for the wavelength to wavelength reflectivity. The coating vendor offers a tolerance of $\pm 20\%R$ with standard calibration. It is a conservative estimate based on the broadband wavelength range and the size and value of the substrates. It may be possible to perform coating development tests to improve the tolerance values at additional cost. Also other dielectric materials used by our vendor do not have sufficiently different refractive indices for this design to work.

4.3 Anti-Reflection Coatings

An anti-reflection coating can be applied to the input surface of the beam splitter block, the input and output surfaces of the compensator plate. The AR coating on the output face of the compensator block can be applied over the full reflector area near the centre of this face as

this will reduce the amount of tooling required and will not alter the properties of the reflector as the reflection occurs within the Infrasil.

An AR coating on these faces will improve transmission and reduce stray reflections. The reflection coefficient of these AR coatings will be <2%R and over the majority of the wavelength will be considerably less. Again the very broad nature of this coating indicates an optimised multi-layer coating made using Zinc Sulphide and Cryolite dielectrics.

4.4 Compensation Coating

A layer of Infrasil can be deposited on the surface of one of the components to take into account the phase of the 50%R beam splitter coating and the full reflector coatings.

The exact thickness of this compensation layer will be computed from a knowledge of the phase response of each of the coatings.

The proposed metal coatings for the reflectors may make this calculation much less involved as these coatings will contribute a constant phase change of $\pi/2$ modified only by the angle of incidence and the protection layer.

The deposited layer can be made using material from the same batch of Infrasil as the main block in the form of a suitable shaped off-cut. This off-cut would be put into the coating chamber and evaporated using bombardment with an electron gun and therefore the material does not need to be powdered but a block of bulk material.

As an alternative the spacer can be fine-tuned in length.

4.5 Summary of coating specifications offered

Coating Type	Wavelength range	Reflectance	Comments
Full reflector	1100nm -2400nm	>95%R	15° AOI / s+p/2
Beam Splitter	1100nm -2400nm	50%R± 20%R	15° AOI / s+p/2
Anti-Reflection	1100nm -2400nm	<2%R	15° AOI / s+p/2

5 Assembly

The component parts will be optically contacted in manageable sub-units prior to full integration. The edges of all the components will be chamfered to remove dangerously sharp edges and to offer protection from chipping during manufacture and subsequent use.

These chamfers are also ideal for the purpose of sealing the optical contacts against moisture ingress which would potentially disrupt the contact. The choice of cement to seal the optical contacts will depend upon the environment in which the assembly will be used and how hostile it is in terms of vibration.

5.1 Documentation

It is proposed to provide a brief test report to include interferograms of each component and coating transmission or reflection curves as provided by the coating vendor.

6 ROM Budgetary Quotation

The rough order of magnitude, ROM, price estimate for the procurement of materials and coatings, polishing and testing of components, optical contacting of parts into the finished assembly and preparation of the report will be as follows;

Price £65,000 ± 20% + VAT ex-works

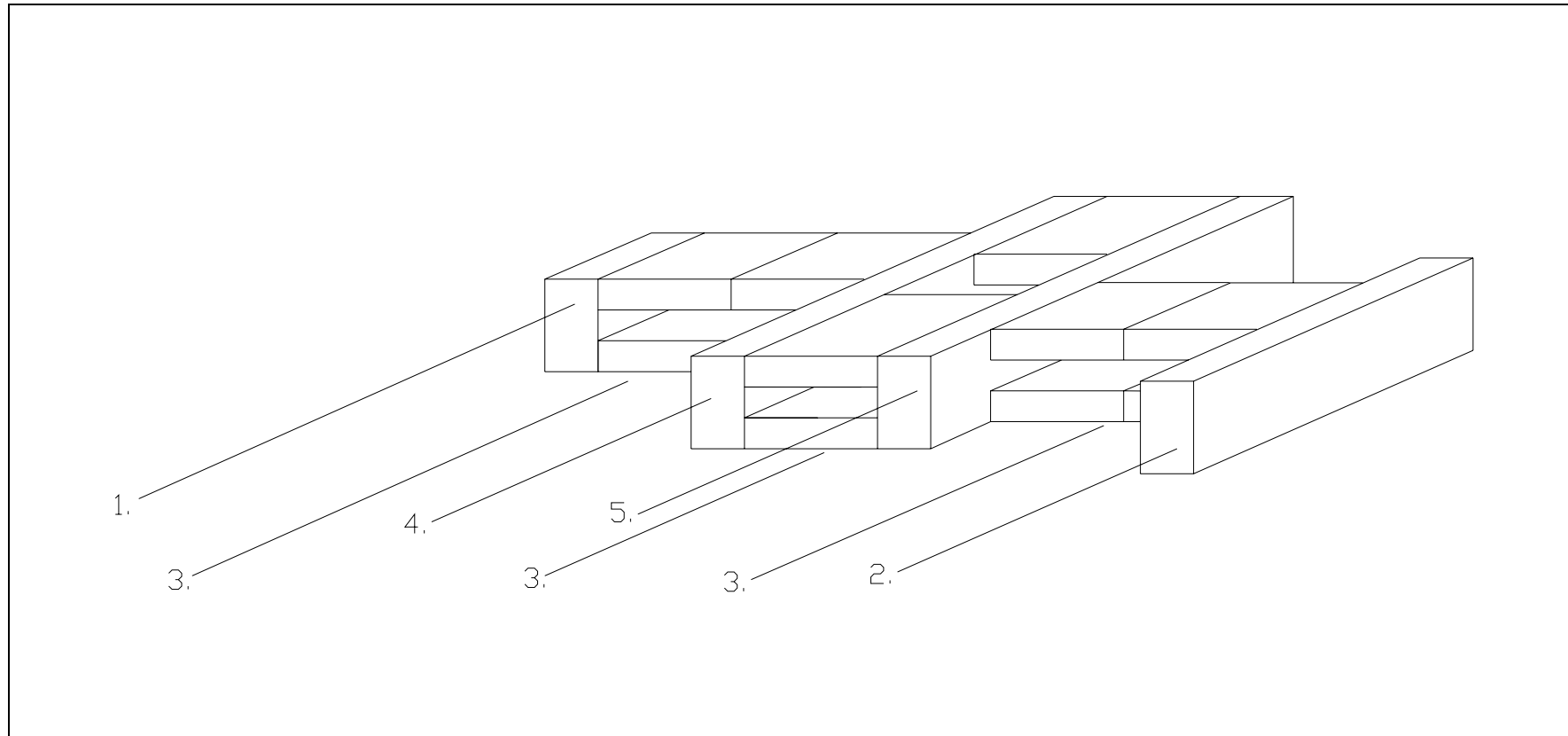
6.1 Schedule

It is anticipated that the work would take approximately 10 months to complete.

6.2 Milestone Payments

We would require that a payment of 15%-25% to cover the initial costs of material procurement.

7 Isometric Sketch of Pupil Plane Combiner



Key

1. Full Reflector Mirror
2. Full Reflector Mirror
3. Zerodur Spacer units or assemblies
4. Infrasil 301 Beam Splitter Plate
5. Infrasil 301 Compensator Plate

IC OPTICAL SYSTEMS LTD

1. DEFINITIONS

In these Conditions ("the Conditions")

- 1.1 "ICOS" means IC Optical Systems Limited and where the context so admits or requires its employees and authorised sub-contractors.
- 1.2 "the BUYER" means the person, firm or company ordering the System from ICOS.
- 1.3 "the Contract" means the contract for sale and purchase of the System made between ICOS and the BUYER to which the Conditions and the Special Conditions (if any) apply.
- 1.4 "Documentation" means all software, information and data (including the Software and any documentation for the Software) which is provided by ICOS to the BUYER in written, graphic or machine readable form.
- 1.5 "the Site" means the location at which the System is to be installed.
- 1.6 "the Software" means any computer program or suite of computer programs whether on tape, disk or other reproductive medium or device detailed overleaf and any other computer program supplied by ICOS for use in conjunction or connection with the System.
- 1.7 "Special Conditions" means any terms set out by ICOS in any quotation or acceptance of order issued by ICOS, and in the event of any inconsistency between the Conditions and the Special Conditions the Special Conditions shall prevail.
- 1.8 "the System" means all and any of the systems and equipment detailed overleaf but excluding any software whatsoever.

2. APPLICATION, QUOTATIONS AND ORDERS

2.1 Application

The Conditions and Special Conditions (if any) shall prevail over any inconsistent terms or conditions referred to in the BUYER's order or in correspondence or elsewhere and any conditions or stipulations to the contrary are hereby excluded and extinguished. No variation or waiver of or addition to the Contract shall be binding unless expressly agreed or confirmed in writing and signed by an authorised officer or representative of ICOS.

2.2 General Application

The Conditions shall also apply to any subsequent agreement between ICOS and the BUYER (except to the extent they are expressly overridden by subsequent agreement in writing by the parties' authorised representatives) for the sale and purchase of spare parts or upgrades or other equipment and to the licence of any Documentation.

2.3 Quotations and Orders

Quotations by ICOS shall unless otherwise specified and unless previously withdrawn remain effective for sixty (60) days from their date of issue. No quotation issued by ICOS shall constitute an offer to sell the equipment the subject of the quotation. Orders for the System (other than spare parts) shall be made in writing and an order placed by the BUYER (whether or not in response to a quotation of ICOS) shall constitute an offer made to ICOS subject to the Conditions and any Special Conditions. Acceptance of such order (which shall constitute the Contract) shall only be by written acceptance of order signed by an authorised officer or representative of ICOS or in default of such written acceptance of order by delivery.

3. PRICES

3.1 Price Payable

The price(s) payable for the System shall be ICOS's prices at the date of despatch, so that ICOS shall have the right at any time before despatch by notice to the BUYER to revise upwards or downwards quoted prices or prices set out in any Special Condition to take account of increases in costs including (without limitation) costs of acquisition of the System or any part thereof or parts therefore, raw materials, carriage, labour or other overheads and the increase or imposition of any tax, duty or other levy. Unless otherwise agreed all prices are and shall be paid in pounds sterling and are exclusive of the costs of carriage, packing, insurance, VAT and any other applicable taxes or duties

which may from time to time be introduced, which shall be paid by the BUYER.

3.2 Effect of Regulations etc.

If by reason of any law, governmental order or regulation the price, any other costs and /or terms of payment under the Contract or any increase, change or variation in such payment or the right of ICOS to require or receive any such payment shall be altered, prohibited or hindered in any way ICOS may terminate the Contract forthwith by notice to the BUYER and shall repay to the BUYER any monies already paid to it by the BUYER in respect of the System.

4. PAYMENT AND CANCELLATION

4.1 Deposits

Deposits are payable on submission of order, ICOS shall return any deposit so paid to the BUYER if ICOS does not accept the BUYER's order, or if the BUYER cancels the order prior to the date of despatch pursuant to Condition 4.3, subject to the right of ICOS to apply the deposit monies towards payment of any cancellation charges arising thereunder.

4.2 Due Date

Unless otherwise agreed in writing payment shall be thirty (30) days from the date of ICOS's invoice in respect thereof. Unless otherwise agreed by ICOS, for overseas customers payment shall be made by irrevocable letter of credit issued or confirmed by a London Clearing Bank.

4.3 Cancellation Policy

ICOS may accept cancellation of the BUYER's order up to 30 days before the date of despatch of the System upon payment of a cancellation charge of 15% of the total price of the System. Additional charges shall be made where the System is custom designed or is adapted or upgraded to meet the BUYER's special requirements. Payment of cancellation charges shall be 30 days from the date of ICOS's invoice.

4.4 Set-off

The BUYER shall in no circumstances be entitled to make any deduction from the price payable for the System by way of set-off or otherwise in respect of any claim or counterclaim which it may have against ICOS.

4.5 Interest

If the BUYER shall default in payment of the price on the due date ICOS reserves the right to charge daily interest on outstanding amounts (as well before as after judgment), without prejudice to any other of ICOS's rights, at a rate equal to 3% above National Westminster Bank plc Base Rate.

4.6 Default

If the BUYER shall at any time default in payment of the price on the due date or if the BUYER's credit standing is at any time in the opinion of ICOS impaired for any other reason ICOS shall in addition and without prejudice to any other of its rights, have the right:-

- (a) to demand forthwith payment for so much of the System as has been delivered to the BUYER whether or not any such payment is due; and/or
- (b) to withhold all deliveries of the System or the Software, any other products to be supplied by it to the BUYER under any other contract between them and any spare parts until such payment is made in full; and/or
- (c) to supply the System on a cash-on-delivery or on a cash-in-advance basis or to require the BUYER to open an irrevocable confirmed letter of credit in favour of ICOS or to provide security for future payments satisfactory to ICOS.

5. DELIVERY, RISK AND TITLE

5.1 Delivery

In any case where the price includes freight charges or other costs of carriage, ICOS shall have the right at its own discretion to select the route and means of transport for delivery of the System and, subject to Condition 5.2 ICOS shall deliver the System at the Site (if named in the Special Conditions) or otherwise at the BUYER's premises.

5.2 Incoterms

In any case where the Special Conditions provide that the System is sold EX Works, CIF, FOB or FOB Airport or on the basis of any other relevant trade term the meaning of such term contained in ICC Incoterms (1980) shall apply as if expressly incorporated in the Conditions or the Special Conditions to the extent that is not inconsistent with any of the Conditions or the Special Conditions.

5.3 Delivery etc. Dates

Delivery dates and any dates for installation or for acceptance are approximate only and whilst it will use its best endeavours to adhere to any such dates ICOS shall be under no liability for any loss, injury, damage or expense consequent upon any delay in adhering to such date from whatever cause including the negligence of ICOS. Delay shall not entitle the BUYER to cancel any order or to refuse to accept delivery of all or any of the System or of all or any other equipment pursuant to any contract between ICOS and the BUYER.

5.4 Delayed Delivery

If the BUYER fails to accept delivery on the due date the BUYER shall in addition to the invoice price pay all costs and expenses of storage and any additional costs of carriage and any other costs or expenses incurred as a result of such failure on the part of the BUYER. The System shall for all purposes be deemed to have been delivered to the BUYER on the date of the first attempted delivery of the System and may be invoiced to the BUYER accordingly.

5.5 Force Majeure

ICOS shall not be liable to the BUYER for any loss or damage which may be suffered by the BUYER as a direct or indirect result of the supply of the System by ICOS being directly or indirectly prevented, hindered or delayed by reason of any circumstances outside the control of ICOS and affecting the provision of all or any part of the System by ICOS's usual source of supply or the delivery of the System by ICOS's normal route or means of delivery, or other circumstances whatsoever, including (without limitation) any act of God, war, riot, strike, lock-out, trade dispute or labour disturbance, accident, breakdown of plant or machinery, failure or shortage of power supplies, fire, flood, drought, explosion, difficulty in obtaining workmen, materials or transport, refusal of any licence or permit or any order, sanction or request of any Government or governmental authority.

5.6 Risk

Risk shall be as provide in the relevant trade term as described in Condition 5.2 above.

5.7 Title

Until payment in full has been received by ICOS for the System and any other goods supplied by ICOS under this or any contract between the BUYER and ICOS:-

- (a) the property in the System shall remain in ICOS; and
- (b) the BUYER will not remove the System, or allow it to be removed, from the Site or from the premises of the BUYER (other than to the Site) without ICOS's prior written consent: and
- (c) the liberty of the BUYER to use the System in the ordinary course of business may be revoked at any time by ICOS by notice in writing to the BUYER, whereupon the BUYER shall place the System at ICOS's disposal, and ICOS shall be entitled to enter upon the BUYER's premises for the purpose of removing the same; and
- (d) ICOS may at any time after delivery of the System and until the total price of the System has been paid in full maintain an action against the BUYER for such total price notwithstanding that title to the System has not passed or that the Contract has terminated.

6. WARRANTY

6.1 Extent

ICOS warrants that the System shall for a period of twelve months from the date of delivery be free from defects in design, workmanship and materials, (other than defects attributable to ordinary wear and tear) and, where applicable, shall meet the specifications referred to in the Special Conditions. If the System does not conform to such warranty ICOS shall at its option:-

- (a) replace the System or any part of it found by ICOS in its sole judgement not to conform to the warranty (all parts replaced by ICOS becoming the property of ICOS); or
- (b) take such steps as ICOS deems necessary to bring the System into a state where it is free from such defects or meets such specifications, PROVIDED THAT if there is a manufacturer's guarantee in force in respect of the System or any part thereof, the period of twelve months shall be substituted by the period left to expire of such manufacturer's guarantee.

6.2 Limitation

Subject as herein provided the aggregate liability of ICOS in contract, for negligence or otherwise shall in no event exceed the price payable or paid by the BUYER for the System and performance of either one of the options under the above warranty shall constitute an entire discharge of ICOS's liability under the above warranty.

6.3 Conditions

The above warranty is conditional upon:-

- (a) the BUYER providing ICOS with adequate written notice of the alleged defect within the above warranty period;
- (b) the BUYER affording ICOS reasonable opportunity to inspect the System on site;
- (c) the BUYER using and maintaining the System in accordance with any instructions or recommendations of ICOS and in particular not subjecting the System to misuse, abuse, neglect, accident, improper alteration or modification or negligence in use, storage, transportation or handling;
- (d) as regards defects in design, the design in question not having been made, furnished or supplied by the BUYER.

7. LIABILITY, PATENTS COPYRIGHT AND TRADE SECRET INFRINGEMENT

7.1 Nothing in the Contract shall exclude liability for:

- (a) death or personal injury resulting from the negligence of ICOS or of its employees while acting in the course of their employment;
 - (b) direct physical loss of, or damage to, the property of the BUYER which is directly attributable to ICOS's breach of contract, negligence or other cause PROVIDED THAT in no case shall the amount of such liability in respect of any one incident or series of incidents arising from a common cause exceed a sum equivalent to £100,000.
- 7.2 Save as provided in Conditions 6 and 7 ICOS shall have no liability to the BUYER in respect of any defect in the System or other breach of contract of whatsoever nature or other default or negligence on the part of ICOS its employees subcontractors or agents and all conditions warranties or other default or negligence on the part of ICOS its employees subcontractors or agents and all conditions warranties or other terms whether express or implied statutory or otherwise in relation to the system its quality and its fitness for any purpose are hereby excluded. Without prejudice to the generality of the foregoing ICOS shall not be liable to the BUYER for any indirect or consequential loss or damage of any kind including any loss of business, contracts, profits or anticipated savings.

7.3 Indemnity

The BUYER shall indemnify and keep indemnified ICOS in respect of any loss or damage whatsoever arising from the claim of any person against ICOS in relation to the System and against all associated damages losses costs and expenses. This indemnity shall be in a continuing indemnity.

7.4 ICOS shall indemnify the BUYER against all claims and proceedings arising from infringement (or alleged infringement) of any patent, design, copyright or trade secret, by reason of the BUYER's use or possession of the System or the Software. As a condition of this indemnity the BUYER shall:

- (a) notify ICOS promptly in writing of any allegation of infringement;
- (b) make no admission relating to the infringement;
- (c) allow ICOS to conduct and settle all negotiations and proceedings and give ICOS all reasonable assistance in respect thereof.

7.5 If at any time an allegation of infringement of patents, design, copyright or trade secret is made, ICOS may at its own expense modify the System or the Software so as to avoid the infringement or may replace the System or the Software so it becomes non infringing.

7.6 The indemnity in Condition 7.4 does not apply to infringements occasioned by:-

- (a) modification to the System or the Software not authorised by ICOS;

- (b) use of the System or the Software in combination with other products not supplied by ICOS; or
- (c) designs or specifications made by or to the order of the BUYER or the BUYER's customers.

The BUYER – shall indemnify ICOS against claims, proceedings and expenses arising from any such infringement.

8. SOFTWARE LICENCE

8.1 The BUYER agrees and acknowledges that ICOS or the licensors of the Software have and shall retain all right, title and interest including copyright and any other intellectual property rights in and to the Software and the BUYER shall obtain only such rights as are specifically provided or referred to in the Conditions, the Special Conditions, or in any agreement in respect of the Software.

8.2 In any case where the Special Conditions provide that an agreement in respect of the Software is to accompany the delivery of the Software the BUYER shall enter into such agreement under ICOS's then prevailing terms and conditions with ICOS or with the licensor specified in such agreement.

8.3 In the absence of any such agreement referred to in Condition 8.2 supply of the Software to the BUYER shall be deemed to confer upon the BUYER a non exclusive non-transferable paid up licence or sub licence from ICOS or the licensor of the Software (as appropriate) to use the Software and Documentation only on the System upon and subject to the Conditions and in particular the following Conditions 8.4 to 8.9.

8.4 ICOS shall supply the BUYER with a single copy of the Software in machine readable form and the BUYER shall not make or cause to be made any copy, reproduction, translation, adaptation, variation, version or modification of the Software (other than copies for back-up use and archival purposes) without the prior written consent of ICOS.

8.5 The BUYER shall keep the Software and the rest of the Documentation and all and any copies of the Software and the rest of the Documentations in whatever form at all times within its own control and shall take all steps necessary to ensure that such materials do not come into other hands whether by loan or theft or otherwise.

8.6 No right or licence granted to the BUYER in respect of the Software shall be assigned, sub-licensed or transferred or otherwise dealt with in any way without the prior written consent of ICOS.

8.7 All and any rights and licences granted to the BUYER in respect of the Software (and any other software supplied by ICOS to the BUYER) shall terminate automatically without the need for notice on the part of ICOS in the event of termination of the Contract for any reason.

8.8 Should the BUYER fail to comply with any of the Conditions or the Special Conditions relating to the Software or to the rest of the Documentation (and if capable of remedy fail to rectify such non-compliance within 30 days of written notice of it) or upon the occurrence in relation to the BUYER of any of the events specified in Condition 10.1(b) then (and in any such case) ICOS reserves the right to give written notice to the BUYER terminating all and any rights and licences granted to the BUYER in respect of the Software (and any other software supplied by ICOS to the BUYER) with immediate effect.

8.9 In the event of termination of the rights and licences granted to the BUYER in respect of the Software howsoever arising the BUYER shall return to ICOS or destroy

(as ICOS shall direct) the Software the Documentation and all copies (in whole or in part) of the Software and (where required by ICOS) certify that to the best of its knowledge all such copies have been returned or destroyed.

8.10 The BUYER shall not erase, remove, cover, deface or alter any trade mark, trade mark or copyright notice, guarantee or other statement or marking affixed or applied by ICOS on or to (or incorporated in) the System the Software or any related technical or promotional material.

9. CONFIDENTIALITY AND INTELLECTUAL PROPERTY RIGHTS

9.1 Confidentiality

The BUYER shall keep and shall procure that its directors, employees and agents shall keep confidential and shall not copy or part with possession of or other

wise disclose in any manner to any other person and of the Software or information relating to the System or any other of the Documentation including drawings, descriptions, part lists and other technical or promotional material supplied by ICOS or any part of such information or material.

9.2 Policing

The BUYER shall use its best endeavours to protect all intellectual property rights in the System and the Software and other Documentation and shall promptly inform ICOS of any infringement or suspected infringement of such rights which may come to its attention.

10. TERMINATION

10.1 Breach

If the BUYER:-

- (a) fails to make any payment when it becomes due or shall default in due performance or observance of any other obligations under the Contract, or
- (b) shall cease or threaten to cease to carry on business or make any composition with creditors or shall have entered into or shall propose to enter into any voluntary arrangement within the meaning of the Insolvency Act 1986, or suffer the appointment of a receiver, administrative receiver or administrator of the whole or any part of its assets or undertaking, or if an order shall be made or a notice be issued convening a meeting of shareholders to consider the passing of a resolution for or a resolution shall be passed for its winding-up (otherwise than for the purposes of amalgamation or reconstruction), or if the BUYER being an individual commits any act of bankruptcy or compounds with his creditors or takes or suffers any similar action in consequence of debt then (and in any such case), ICOS may give written notice to the BUYER terminating the Contract forthwith.

10.2 Consequences

Termination of the Contract howsoever arising shall be without prejudice to the rights and liabilities of either party which may have accrued on or at any time up to the date of termination or any of the provisions of the Contract (such as those relating to Confidentiality and Intellectual Property Rights) which are of a continuing nature.

11. GENERAL

11.1 All recommendations and advice whether oral or written given by or on behalf of ICOS to the BUYER as to any methods of using or applying the System or the Software and the purposes to which the System or the Software may be applied are given without liability on the part of ICOS.

11.2 All drawings, photographs, illustrations, specifications, performance data, dimensions, weights and the like, contained in any literature or other material supplied by ICOS under or in connection with the Contract or otherwise communicated to the BUYER are provided or made by ICOS in the belief that they are as accurate as reasonably possible, but except for current published ICOS system and software specifications, they do not constitute a description of the System or of the Software, nor shall they be taken as representations by ICOS nor are they warranted to be accurate.

11.3 No relaxation, forbearance, delay or indulgence by ICOS in enforcing any of the terms or conditions of the Contract or the granting of time by it to the BUYER shall prejudice affect or restrict its rights and powers under the Contract.

11.4 The BUYER shall not assign, transfer, charge or otherwise deal with the whole or any part of the Contract without the prior written consent of ICOS.

11.5 Any notice or invoice to be given hereunder shall be given by sending the same by prepaid first-class post, or by telex or by facsimile transmission to the principal place of business of the relevant party or to such other address as such party may have notified to the other for the purposes hereof. Any notice or invoice sent by post shall be deemed (in the absence of evidence of earlier receipt) to have been served ten days after despatch. Any notice sent by telex or facsimile transmission shall be deemed to have been served on the day following its despatch.

11.6 The Contract will be governed by and construed according to the Laws of England.