

Tekdata interconnection systems

14-03-01

from : Roy Blake

cc : D Williams

Rutherford Appleton Laboratory : Herschel SPIRE Cryogenic Harness Ass.

attention : Dr David Smith

Quotation No. 4949 PDB 7095 Addendum 1.

Good afternoon David,

here, as requested, is the breakdown in the costs associated with our revised quotation. Where the manufacturing costs are amortised across the assemblies it will not be possible to attribute them to individual cables, for example a number of assemblies use a twisted pair screened & sheathed cable and its set up costs are averaged across the parts.

Should you choose to not use the pair screened in some instances then the cases where you still want to use a screened pair will attract more cost to cover the setups incurred.

The cables that form the basis of this document are :-

Intermediate Harnesses

4.2.1	11 HSDCU to CVV1
4.2.2	12 HSDCU to CVV2
4.2.3	13 HSDCU to CVV3
4.2.4	14 HSDCU to CVV4
4.2.5	15 HSDCU to CVV5
4.2.6	16 HSDCU to CVV6
4.2.7	17 HSDCU to CVV7
4.2.8	18 HSDCU to CVV8
4.2.9	19 HSDCU to CVV9
4.2.10	110 HSDCU to CVV10 AUX-P
4.2.11	111 HSDCU to CVV11 DRV-P
4.2.12	112 HSDCU to CVV12 AUX-R
4.2.13	113 HSDCU to CVV13 DRV-R

Cryo Harnesses

4.3.1	C1 CVV1 to HSJFS
4.3.2	C2 CVV2 to HSJFS
4.4	C3 CVV3 to HSJFS
4.4.1	C4 CVV4 to HSJFS
4.4.2	C5 CVV5 to HSJFS
4.4.3	C6 CVV6 to HSJFS
4.4.4	C7 CVV7 to HSJFS
4.4.5	C8 CVV8 to HSJFS
4.4.6	C9 CVV9 to HSJFS
4.4.7	C10 CVV10 to HSJFS AUX-P
4.4.8	C11 CVV10 to HSJFS DRV-P
4.4.9	C12 CVV12 to HSJFS AUX-R
4.4.10	C13 CVV13 to HSJFS DRV-R

In total there are 17 miniature cable types and they are made up of various wire types, dielectrics, screened OVs, sheaths and overall screens. How you may consider revising your designs will need to take the following into consideration :-

Wire types : 1) Manganin 38 AWG
2) Brass 38 AWG
3) Brass 30 AWG
4) Copper 30 AWG

Configurations : 1) Singles (3 types)
2) Pairs screened and outer sheathed (4 types)
3) Triples screened and outer sheathed (4 types)
4) Quads screened and outer sheathed (4 types)
5) Quads outer sheathed only (3 types)
6) 12 AX screened and outer sheathed (1 type)

Materials : 1) Dielectrics FEP
(Fluorinated Ethylene Propylene)
2) Primary braids 0.05 mm stainless steel
3) Jackets FEP
4) outer shields 0.06 mm stainless steel


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continued on sheet 2.

Tekdata's standard terms and conditions apply. This quotation will require revalidation 30 days after the issue date.

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Sheet 2.

Machine setups : The total of machine setups is 62 which cover extruding, bunching, braiding jacketing & shielding. These costs are in the sum of£ 18, 865. 00

Material costs associated with the cable making.....£ 5,890.35

(10 % of this value is wastage/handling factors and an allowance for spare material should any damage occur during any of the manufacturing processes.)

Material costs associated with tooling and encapsulation of the connectors for protection and strain relief :

1. Part tooling/design charges.....£ 1,300.00.
2. Potting materials.....£ 554.00.

Material costs for connectors. Micro D type and class 1 subminiature D types.

1. Submin. Ds : 14 x 37 plugs, 8 x 37 skts,
18 x 50 D skts, 2 x 25 D pl, 4 x 15 D plugs
& 2 x 9D plugs.....£ 385.45.
2. Micro D types : 2 x 15MDM plugs, 27 x 25MDM skts,
3 x 37MDM skts, 15 x 37MDM plugs.....£ 2,173.20.

Material costs for as required items : solders, special fluxes, cleaning fluids...£ 312.25

Labour costs associated with :

- 1) Management.....£ 2,575.00.
- 2) Engineering & supervisory support.....£ 2,250.75.
- 3) Assembly....a) 8,060 terminations
b) 2,556 screen ends
c) 228 shields.....£ 21,306.50.
- 4) Encapsulation 121 connectors.....£ 1,028.50.
- 5) Ultrasonic cleaning 91 single ended
and 26 final assembly harnesses.....£ 663.00
- 6) Intermediate and final inspection.....£ 1,780.00.

(With one off applications of this complexity we use class1 technical grade operators.)



continued on sheet 3.


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sheet 3.

Design cost reductions : Areas that would impact significantly on costs :-

- 1) Reduce the types of cables : Reduces setup & material costs.
- 2) Remove the overall stainless steel shielding : Reduces setup, material, termination & cleaning costs.
- 3) Remove the individual stainless steel shields : Reduces setup, material, termination & cleaning costs.
- 4) Reduce the overall lengths of the harnesses : Reduces material costs.

(The overall length allowance for the intermediate/cryo harnesses is 9.0 mtrs.)

We realise the significance of these changes and the possible impact to the project timescales as the direct result of our revised quotation, to assist in reaching a satisfactory conclusion Tekdata would be prepared to absorb a proportion of the final additional costs. This would need to be agreed as part of the final negotiations/design revisions & included in any revised proposal/quotation.

The calculations for your Herschel SPIRE harnesses are created in a form that does not allow you to focus on areas of cost reduction, I have represented them in a form which I hope will give you a better view. I will be pleased to clarify any points you wish to raise and answer any additional questions.

Regards, Roy.

final sheet



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