

AccessionIndex: TCD-SCSS-T.20251206.001

Accession Date: 6-Dec-2025

Accession By: Dr.Brian Coghlan and Philip Watson

Object name: Sailmaking Plotter Server

Vintage: 1993

Synopsis: Robust IBM PC plus I/O boards that drove a large sailmaking plotter.

Description:

In about 1981 Dr.Brian Coghlan, who was at the time engaged in teaching and research on very large-scale integrated (VLSI) circuit design techniques, embarked on the design of a large 48-inch x 48-inch photoplotter [1] for creating VLSI mask negatives. At the same time he was collaborating with the Professor Adrian Philips of the Department of Geology, hosting a VICOM image processor (see elsewhere in this catalog) and a very large Calcomp 960 plotter [2], both using Brian Coghlan's *Core79* and *Cupid* three-dimensional graphics software, plus George Washington University's PADL solid modelling package. Simultaneously Brian Coghlan was collaborating with Peter Lynch at the Irish Meteorological Office (now Emeritus Professor, School of Mathematics and Statistics, University College Dublin) in developing driver software for Calcomp960 plotters.

At about the same time, TCD computer science undergraduate Amanda Lee did her final-year project on a software package for designing and plotting spinnaker sails, again using Brian Coghlan's *Core79* and *Cupid* three-dimensional graphics software, with guidance from Philip Watson of Watson & Jameson Sails. Sail panel plans (for cutting sailcloth) as well as spinnaker views in 3-d perspective were able to be plotted on interactive graphics displays as well as on the Calcomp 960 plotter.

So when, more than a decade later, Watson & Jameson Sails were considering the acquisition of a large sailmaking plotter with software but without a compute server, Brian Coghlan knew enough about large plotters to be able to offer advice, and also offered to assemble a robust IBM-PC-compatible server from disparate parts (the strongest case, the most reliable motherboard, reliable fans, etc) of research servers he was decommissioning. The plotter, which was made by Blackman and White in Essex, U.K., was purchased in 1993, interface boards were installed in the server, then at a later date Brian Coghlan traced the circuitry to create service documentation, see elsewhere in this catalog.

Design of sails was done off-site using Windows-compatible design software called *Prosail*, written by Paul Carr in New Zealand. From the design files, the plotter then drew the outline of sails on sailcloth in such a way as to optimize the use of expensive sailcloth such as Kevlar. The sailcloth was held on rollers at the top and bottom of the plotter, and moved up and down by rotating the rollers with servomotors, while the pen was moved horizontally by another servomotor. The positions of the servomotors were sensed by Gray-code digital position encoders and decoded by Hewlett-Packard chips, one for the X-axis, the other for the Y-axis. The servomotor high-power driver electronics and the position sensing electronics were mounted in a cabinet below a desk beside the plotter.

In 2025 the plotter was decommissioned. In 31 years this server had only had the hard disk replaced with an SSD, and had not had a single fault. The photoplotter itself had just one failure of some integrated circuits in its position sensing electronics.

Many thanks to Brian Coghlan and Philip Watson for donating this item.

The homepage for this catalog is at: <https://www.scss.tcd.ie/SCSSTreasuresCatalog/>
Click '*Accession Index*' (1st column listed) for related folder, or '*About*' for further guidance. Some of the items below may be more properly part of other categories of this catalog, but are listed here for convenience.

Accession Index	Object with Identification
TCD-SCSS-T.20251206.001	Sailmaking Plotter Server. IBM PC plus I/O boards that drove a large sailmaking plotter. 1993.
TCD-SCSS-V.20251206.001	Sailmaking Plotter Documentation. Documentation for a large sailmaking plotter. 1994.
TCD-SCSS-T.20140904.004	High-resolution Photoplotter Controller. Controller for 48-inch x 48-inch photoplotter with 0.0001-inch resolution. C.1981.
TCD-SCSS-T.20121208.038	VICOM Image Processor boards. Versabus PCBs from the VICOM image processor used by the Dept. Computer Science during 1982-1990, one of the first generation of dedicated image processors. c.1982.
TCD-SCSS-W.20150306.047	CTP026 VICOM Driver Software V1.0. Software distribution (12 inch tape). C.198x.

References:

1. Trinity College Dublin, *High-resolution Photoplotter Controller*, see: <https://www.scss.tcd.ie/SCSSTreasuresCatalog/hardware/TCD-SCSS-T.20140904.004/TCD-SCSS-T.20140904.004.pdf>
Last browsed to on 6-Dec-2025.
2. Wikimedia Commons, *Calcomp 960*, see: https://commons.wikimedia.org/wiki/File:Calcomp_960.jpg
Last browsed to on 6-Dec-2025.



Figure 1: Sailmaking Plotter, with cover on.



Figure 2: Sailmaking Plotter, with cover off.



Figure 3: Sailmaking Plotter, front view.



Figure 4: Sailmaking Plotter, control panel closeup.



Figure 5: Sailmaking Plotter, with Philip Watson.



Figure 6: Sailmaking Plotter Server and keyboard, mouse and display.



Figure 7: Sailmaking Plotter, side view showing sailcloth on servo-driven rollers.



Figure 8: Sailmaking Plotter, showing vacuum pump and plumbing.



Figure 9: Sailmaking Plotter, closeup of plumbing.



Figure 10: Sailmaking Plotter, closeup of vacuum pump.



Figure 11: Sailmaking Plotter, showing wiring connections to servo-controller and position-sensing electronics.



Figure 12: Sailmaking Plotter, view of right underside of plotter bed.



Figure 13: Sailmaking Plotter Server, view of left underside of plotter bed..

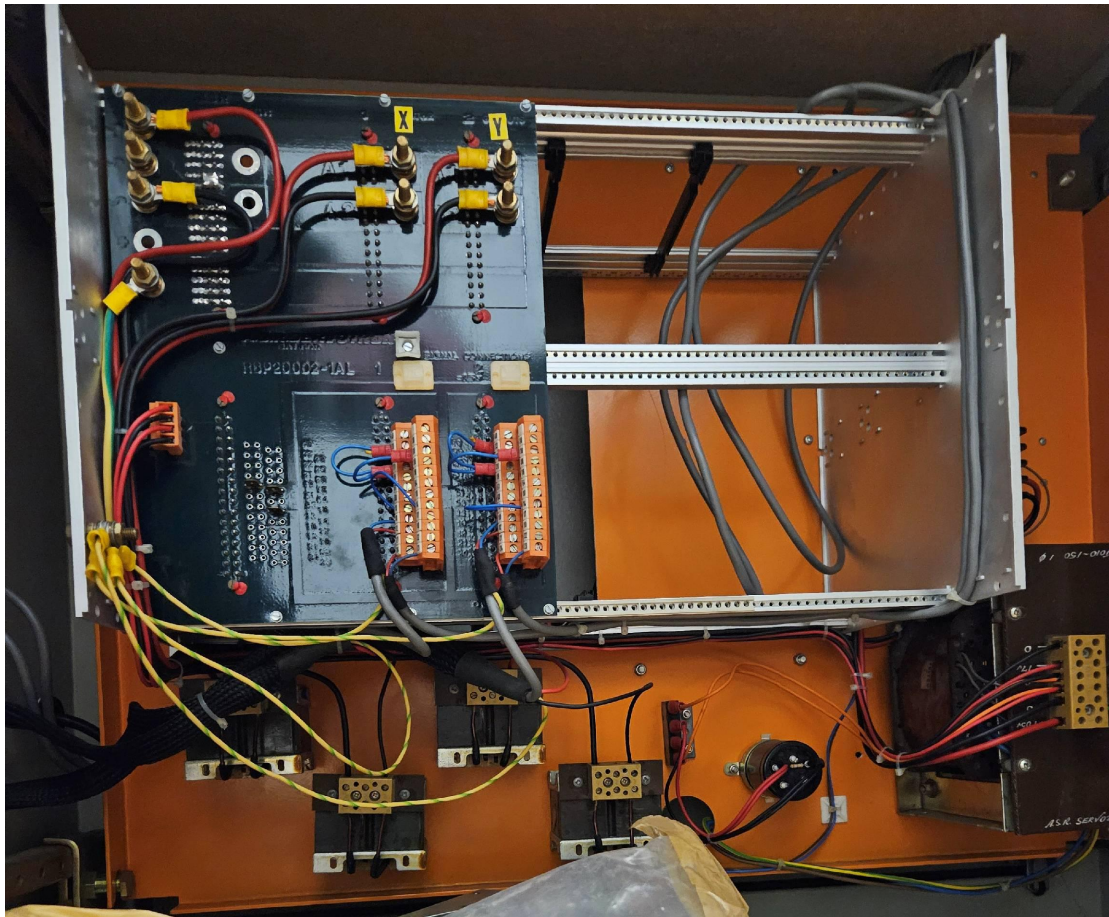


Figure 14: Sailmaking Plotter, servo-controller and position-sensing electronics under desk.



Figure 15: Sailmaking Plotter Server, rear and front views.

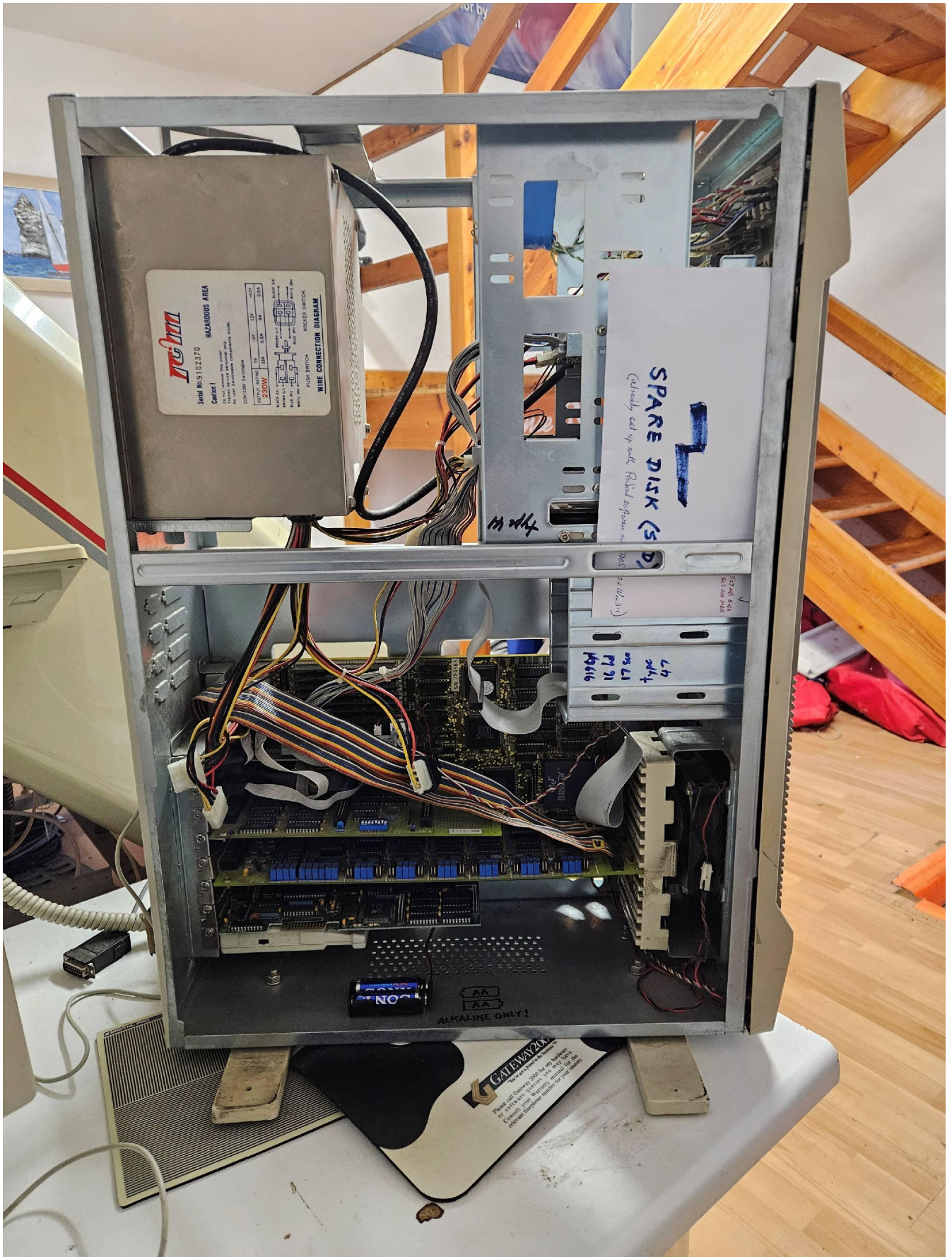


Figure 16: Sailmaking Plotter Server, side view with cover off.

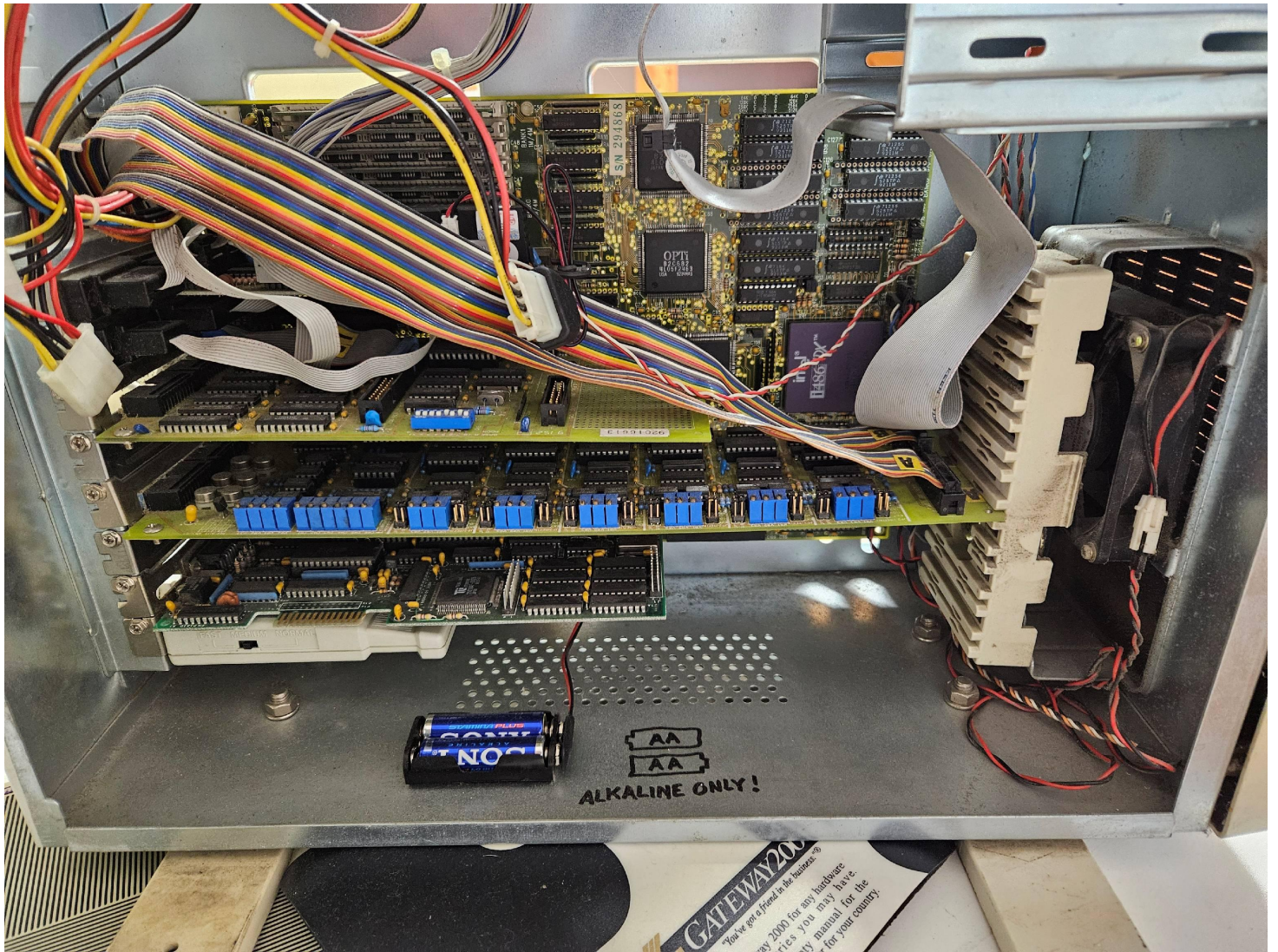


Figure 17: Sailmaking Plotter Server, side closeup of plotter interface boards.