Spares Kits & Stations

- • **Minimize Downtime**
- • **Kits/Stations at Reduced Prices**
- • **12-Month Warranties**
- • **Customize to Any System Configuration**

Minimizing Downtime

With maintenance training and the right set of spare assemblies on hand, downtime with Reedholm is counted in minutes after troubleshooting to the module level. That is all it should take to pull a spare module, set its address, plug it into the backplane, wait for system warm up after initialization, and then run the system diagnostics and self-calibration software.

On the other hand, not having spare modules on hand could lead to weeks of lost production. Even if it only takes a few minutes for the self-test software and/or Reedholm support to help isolate a damaged module, the system would be down the entire time for the module to be shipped, repaired, and returned.

Spare Module Kits

Equipment downtime can be largely eliminated with a standard kit of modules that includes those most likely to fail because they switch currents and voltages capable of relay damage. Each kit has a matrix module, digital multimeter, and programmable supply. They are sold at a 13% discount from the aggregate list price.

But other modules and assemblies such as the 100kHz CMM, PPG, or HVSMU can fail, so the probability of downtime can be reduced by adding any module or assembly to a kit for the same 13% discount.

Part #	Description
19031	Spare Module Kit, PAM-16N Matrix Includes one each VFIF-16, DMM-16, and PAM-16N w/o TSC
19032	Spare Module Kit, CPM-N Matrix Includes one each VFIF-16, DMM-16, and CPM-N

Support Station

Having a spare for each type of module in the system addresses the most likely failures from a Pareto chart perspective, but does not eliminate the chance of downtime. That can only be done with complete redundancy of all elements that can fail from use or handling.

One way to achieve that is with multiple test systems and excess capacity equivalent to that of a single system. If there is not enough demand to warrant an extra system, a card cage or RI-40 power unit with a spare backplane plus a test controller is all that is needed to keep a set of spares running self-test software continuously. This station would eliminate problems that arise when damaged spares are put back into storage instead of being repaired.

- • A card cage with a backplane, dc power supplies, PCL, and internal cables, or an RI-40 power unit and a spare five-slot backplane.
- • A test controller containing a CIC, IEEE-488 interface, and associated digital cabling.
- • Spare modules for each type of module in the production test system.
- • Analog cables compatible with those in the production system and capable of operating with the latest matrix cards with node 0 protection.

Engineering Station

The next step up is to duplicate the instrument functionality with matrix and other modules so that test plans can be developed/debugged without tying up production systems. This type of station would not need an autoprober if wafers can be handled manually.

Because acquisition of such a station is essentially bringing spending forward in time, Reedholm keeps costs low even though the system is effectively a duplicate of a production one. Costs would be little more than that of a support station, yet free up use of a production system that would otherwise be used for development. With additional license fees, the engineering station could be moved right into production when justified by demand.

Justifying Spares

Not having spares on hand, and/or being trained in their use, can be quite expensive. It doesn't take long for the cost of production delays to overwhelm the cost of a few spare modules.

Revenue loss due to missed product shipments is not easy to make up. There are some that say that it cannot be done in a fixed period of normal business since there is always backlog that could have been shipped while the downtime lasted.

Though harder to calculate, the long-term costs of delayed shipments, missed customer expectations, and problems caused by production bottlenecks need to be considered as well.

Even harder to calculate is the reduced quality that happens when process monitoring sample size is reduced and/or reliability testing is done manually. If lucky, nothing untoward happens, but reducing coverage that was probably at the minimum level can cause problems far downstream.

Spares and support stations that allow on-the-spot fixes eliminate the temptation to sample.

Obsolete and Discontinued Modules

Reedholm 12-bit modules such as the DMM-12, VF-12, and VFIF-12 have been obsolete for some time. A list of obsolete and discontinued modules is at:

http://www.reedholm.com/products/obsolete.htm

A VFIF-16 can be used to replace the VF-12 and VFIF-12 modules, so a spare VF-12 is not needed for a full complement of four system supplies.

The 100kHz CMM replaces the previous Boonton-based CMM, at least at 100kHz. For most high frequency measurements, 100kHz does the job as well as 1MHz excitation. If 1MHz is absolutely needed, another solution should be found before there is a problem with a 1MHz Boonton.

If the system software has not been upgraded in several years, a new spare module, such as a VFIF-16, might not operate. Older software versions are not patched to support newer assemblies. If there is any doubt that a new module will work as a spare, support@reedholm.com should be contacted.