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HOW IT WORKS

High-speed Microplate Moving

Problem: The automation of workflows is becoming commonplace in the vast majority of drug discovery research facilities and in an increasing number of academic laboratories. It is of extreme importance therefore, that automated instruments are as reliable as possible. As a key device in many automated systems, the microplate mover transfers microplates between different instruments within the workflow. However, the reliability of some movers has become an issue and researchers' time is being occupied by clean-ups and re-starts following collisions, for example. It has also been noticed that during transfer, plate gripping may not always occur efficiently, resulting in samples being dropped. This not only causes an unnecessary mess, which instantly poses a safety risk, but can also result in the loss of precious samples. If a plate is not picked up for transfer, the mover is not always aware and continues regardless, causing laboratory inefficiencies. Furthermore, abrupt and jerky movements, in combination with hard stops, can have a negative influence on experimental integrity. This is especially true when working with live cells, where sudden motions have the potential to disrupt vital signaling processes, leading to a significant decrease in experimental integrity.

Solution: In order to provide an effectively streamlined workflow with walk-away capabilities, each piece of equipment needs to be extremely reliable at operating without any adverse effects. As such, the Thermo Scientific Orbitor RS has been designed as one of the most reliable movers in its class. This high-speed microplate mover offers reliable performance in combination with highly flexible plate handling. With the ability to feed up to four instruments with ease, this plate mover can detect any collisions with other instruments, and resolve them quickly. Since the mover automatically stops when it encounters minimal resistance, safety is ensured at all times while the occurrences of breakages and spillages are greatly minimized. After a collision has occurred, there is no need to re-home the arm or re-start the assay. Instead, the error is simply cleared and operation resumed, minimizing instrument downtime. Since the mover is PC-driven, operational efficiency is maximized and all functions are easily executed via a user-friendly interface.

With plate sensors located within the gripper, the mover is able to accurately detect whether or not it has picked up a plate. This eliminates the inconvenience of plates being dropped, in addition to the inefficiencies associated with moving an empty gripper. As a highly flexible plate mover, the Orbitor RS™ is compatible with the vast majority of available plate types, from shallow to deep well, in addition to tip boxes and lids, tubes and racks. Random or sequential access is supported, and both stacks as well as hotels accommodate most SBS standard plate types in portrait and landscape orientations, facilitating the ability to mix modes of storage as assay requirements change.

A bi-directional telescoping arm provides continuous 360° rotation, in addition to fast and efficient movements, improving user safety. Its extensive vertical reach allows multiple-stacked or high-density instruments to be loaded in a small footprint. The arm has the ability to travel horizontally through the base unit tower, remaining inside while turning, to provide smooth and fluid actions with no hard stops. Additionally, the Orbitor RS encompasses motion blending techniques to eliminate any jerky movements, providing cell-based researchers with the confidence that their samples will not be subjected to any harsh and potentially damaging movements.

For further information, please visit www.thermoscientific.com/automate. Canada: 905-332-2000

▲ *The Thermo Scientific Orbitor RS can access complicated set-ups, including stacked instruments, as well as reach virtually any benchtop instrument. It also fits comfortably in most biosafety cabinets.*