

On-Demand and Synchronized Scanning Modes

On-Demand Mode

After first connecting to a scanner, it will be in what is called On-Demand mode. In this mode, you can send a request and it will execute the measuring process and return a Profile. The call to [GetProfile\(\)](#) will block (i.e., hold) the execution of your application, for as long as it takes to execute the request. Similarly, the call pair [BeginGetProfile\(\)/ EndGetProfile\(\)](#) will block in [EndGetProfile\(\)](#) until the measured profile is returned.

This mode is most suitable for applications with low scan rates and a single head. You cannot "overdrive" the scanner in this mode (i.e., force it to go too fast and lose data). A major downside of On-Demand mode is the fact that you will not be able to achieve high scan speeds. Because the time a scan takes can be affected by network timing and PC speed, On-Demand mode is also not suitable for interleaving multiple scanners to avoid interference.

Synchronized Scanning

Synchronized Scanning (also referred to as Synchronized Mode) is another way of getting profile data from the scanner. The primary difference to On-Demand Mode is that the trigger for a scan does not come from the controlling computer but from a timer, an encoder or a pulse on the StartScan input line. Any of these events can trigger a scan, after which the resulting profile is stored onboard the scanner head until the controlling computer requests a transfer.

The three subtypes of Synchronized Scanning Mode are:

- [TimedSyncMode](#)
- [EncoderSyncMode](#)
- [PulseSyncMode](#)

In [TimedSyncMode](#) or [EncoderSyncMode](#), the scanner will automatically scan at preset intervals (from the parameters file), based on elapsed time or encoder value, respectively.



[TimeSyncMode](#) is not suitable for a multi-head setup, because each head uses its own internal clock, which may drift compared to the others.

Enter Synchronized Mode

As stated above, a scanner starts in On-Demand Mode. Enter Synchronized Mode by calling one of these functions:

- [EnterEncoderSyncMode\(\)](#)
- [EnterTimedSyncMode\(\)](#)
- [EnterPulseSyncMode\(\)](#)

Retrieve Profiles from Scanner in Synchronized Mode

In Synchronized Mode, retrieve profiles from the scanner by calling any of these functions:

- [GetQueuedProfiles\(\)](#)
- [GetQueuedProfiles\(int maxProfiles\)](#)
- [BeginGetQueuedProfiles\(\)](#) or [BeginGetQueuedProfiles\(int maxProfiles\)](#) , followed by [EndGetQueuedProfiles\(\)](#)

Restart Synchronized Mode

Call [EnterEncoderSyncMode\(\)](#) , [EnterTimedSyncMode\(\)](#) , or [EnterPulseSyncMode\(\)](#) to discard any remaining unread profiles and restart Synchronized Mode.

Leave Synchronized Mode

Call [ExitSyncMode\(\)](#) to discard any remaining unread profiles and fall back to Non-Synchronized (On-Demand) Mode.

If you call a non-synchronized function during Synchronized Mode, an exception of type `JCamNet.ScannerOperationException` will be thrown.



The term Synchronized Scanning is somewhat misleading, because the scan and readout cycles are run independently (asynchronously). The naming instead comes from the fact that all scan heads are triggered by a signal from an encoder or timer, and thusly operate "in sync" with each other.