

Control Pit Geometry with PCS-2

DCA's latest generation version of Pulse Control System (PCS-2) - allows the user to alter the pit geometry of an optical disc by modifying the EFM/EFM+ signal during mastering. DCA's PCS-2 builds upon years of experience with pit geometry adjustment, and provides finely tuned control over pit geometry. The purpose of pit geometry control is simple: to pre-adjust the signal from the encoder to take into account the various effects on pit geometry created afterwards during the replication process. The end result is that the final replica's geometry is as close to ideal as possible.

In optical media, pit geometry control can be used to pre-compensate for exposure, development and molding limits. For example, when a stamper is used to mold plastic, the pits will end up slightly larger than the lands due to mold release issues and plastic shrinkage while cooling. The same effect occurs when stampers are made from a glass master, not because of shrinkage, but because of the effects of photo-resist on stamper formation. The size of the structures on the discs will also matter - a 2T land will shrink differently than a 11T land, and the size of the pits on either side of different pits will also be affected due to thermal affects.

PCS-2 allows you to compensate for these and other factors during mastering. When used in a stable manufacturing environment, altering the leading edge, trailing edge and pulse intensity (amplitude) of individual pits or pit/land pairs during recording can distort the encoder signal to "null" out manufacturing process issues. This can result in reducing disc parameters such as jitter, even at faster molding rates.

PCS-2 is available as an option on MIS V8. Since PCS-2 is built into the MIS V8 Encoder, there is no additional board, cabling or external boxes required. This means less effect on the output during the actual adjustment of pit geometry.

Advantages of PCS-2

- The width and amplitude of pulses in the EFM stream can be easily adjusted.
- Each run-length pulse can be adjusted separately, which enables the EFM stream to be optimized for a particular production process.
- Flexibility to manipulate any land-pit run-length combination.
- PCS-2 is built into the MIS V8 Encoder, there are no additional boards, cabling or external boxes required.

PCS-2 Pit Geometry Control

Laser Beam Recorder (LBR) with PCS-2 allow CD and DVD mastering engineers more exact control of pit geometry. The latest generation of PCS-2 allows the mastering engineer to control LBR intensity and pulse duration based on the length of the element being cut, and the surrounding elements. This results in higher throughput at disc replication, and more playable discs.

In PCS-2 the mastering engineer has the ability to control the pulse width and amplitude of specific pit run lengths. The run lengths and amplitude can be controlled globally where, for example, every I-3 pit is increased in amplitude regardless of the surrounding run lengths or the pit geometry can be manipulated only when a certain run length pit follows a certain land run length.

For instance, the mastering engineer might want to increase the run length and amplitude of I-3 pulses, but only when they follow I-11 lands. PCS-2 gives the mastering engineer the ability to manipulate any land-pit run length combination. Taking advantage of this option for CD and DVD production is simple.

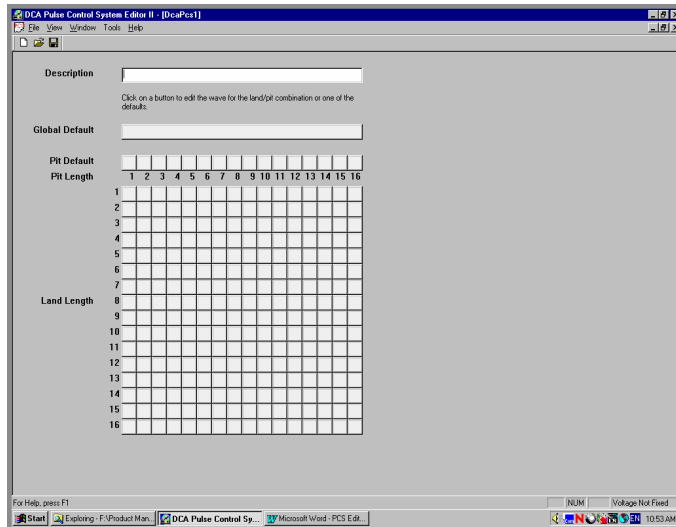
For more information on PCS-2, contact your Regional Sales Manager.

PCS-2 Includes the Following New Features and Enhancements

- Pit Geometry can be adjusted at all Encoder supported speeds.
- No re-cabling required from standard encoder.
- Alter leading edge, trailing edge and pulse intensity (amplitude) of individual pits or pit/land pairs as a global or individual setting.
- Greater control over the Land run length and Pit run length adjustment.
- New PCS-2 Pit Geometry Editor simplifies setting the desired adjustments.

The following functionality is accessed through the PCS-2 Pit Geometry Editor:

- **Global Default:** allows you to modify the default setting for all pit and land lengths without having to change each one.
- **Leading edge delay:** -16 to +16 in integer increments. The value defined represents 1/16T time delays (+) or advance (-).
- **Trailing edge delay:** -16 to +16 in integer increments. The value defined represents 1/16T time delays (+) or advance (-).
- **Pit Default/Pit Length:** allows you to modify the default settings for all pit and land lengths in a selected column.
- **Pit amplitude adjustment:** minimum amplitude value of 0 volts; maximum amplitude value of 4.0 volts.



The main user interface window of the PCS Editor contains all the controls you need to create a PCS File.

- **Incremental Voltage Levels:** allows you to modify all amplitude values with a maximum value of 4.0 volts and a minimum value of 0.0 volts.
- **Scale Voltage Levels:** dialog allows you to modify all amplitude values. The maximum value is 4.0 volts and the minimum value is 0.0 volts.
- **Fix Voltage Levels:** dialog allows you to change all voltage values and disable voltage editing.

For more information on DCA's DDP Player, contact your DCA Regional Sales Manager

Americas

Fred Perez
Fredp@dcainc.com
Telephone:
925-426-9948
Fax:
240-248-1105

Europe

Chris Vangramberen
chrisv@dcainc.com
Telephone:
+49-6021-45900-0
Fax:
+49-6021-45900-29

Japan & Asia

Nozomu Hayatsu
nozomu@dcainc.com
Telephone:
+81-3-3402-5631
Fax:
+81-3-3402-5615