



Specification Document

OP-10[©] Disc Over-printing System

Bronway OP-10[©], Personalised Disc Overprinting System

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OP-10[©] Disc Over-printing System



Patent Pending

Overview

The Bronway OP-10[©] is a high speed, high volume and high quality, Disc Over-Printing System designed for the personalisation of Optical Media at production rates of up to 60ppm. The Over-Printing process may be driven by a customer-supplied database, which can be generated off-line on a networked computer system. Up to six lines of unique variable text or bar codes to be printed on each individual disc.

The system can be employed to create customised decoration by over-printing optical discs with:

- **Serialised data**
- **Unique software key information for each disc**
- **Security Codes**
- **Serial Numbering**
- **SKU numbering**
- **Unique personal information for each disc (6 lines each containing up to 50 characters). This may be Name and Address or personal message.**
- **Unique bar codes for each disc,**
or a combination of all of the above.



Principle Of Operation

The operator loads spindles of pre-decorated discs into the six-spindle changer. The work order bar code is scanned into the OP-10, using a hand-held wedge scanner, this automatically selects the correct data set to be used for the current job from the networked database or locally from the OP-10. Discs have their IDENT code bar codes automatically checked prior to overprinting – any incorrect codes are placed on the reject spindle.

Discs are placed onto an indexing dial plate and held by vacuum. The dial plate indexes the disc to an orientation station where a patented high precision orientation system accurately registers each disc ready for over- printing.

The disc is then overprinted with the customising data, creating a unique disc. The customised printing is then checked for accuracy using a unique print verification system; good discs are counted onto the output six spindle changer whilst failed discs are rejected.

Two modes of operation are available STRICT SEQUENCE and NON-STRICT SEQUENCE, in Strict Sequence any rejected discs are immediately re-printed and the replacement disc placed on the output spindle, preserving the supplied database order.

Key OP-10 Features

- Simple database selection for print runs, which can be interfaced to a bar code obtained from production documentation.
- Six spindle input and output buffer.
- Reject disc tracking through the process to a reject buffer.
- Set-up of CD/DVD IDENT/Barcode(s) via barcodes obtained from production documentation using hand-held wedge scanner.
- In-line CD/DVD IDENT/Barcode(s) validation to ensure the correct disc is in use.
- In-line CD/DVD Orientation to a positional accuracy of $\pm 0.5^\circ$ prior to printing.
- High Speed reliable printing process, which can be positioned at any location on the disc.
- Post customisation validation of the uniquely printed information, using a patented system that dynamically compares the printed data with the source data.
- A dynamic graphical user interface (GUI), allows the operator to monitor the print data and the inspection information in a clear, intuitive and easy manner.
- The OP-10 is CE Marked



Personalised Printing

Printing is by a thermal transfer method, in one colour, a range of font types and sizes may be used. The print area is limited to 50x70 mm on each disc. A larger print head can be deployed to give a greater print area if required. Registration of the customised printing to the disc decoration is within an accuracy of 0.1 mm.

The customised data may be printed anywhere on the surface of the disc. Up to six lines of text, each containing up to 50 characters can be printed. Each line of data may consist of a bar code, a sequential or random indexed number or any user-defined fixed or variable string or a combination of both.

UV Curable Inkjet solutions are currently being investigated.

Re-orientation

Prior to printing the discs are orientated using information contained within the pre-printed artwork to an accuracy of $\pm 0.5^\circ$. This is achieved using a patented high precision computer controlled alignment system.

Disc Handling System

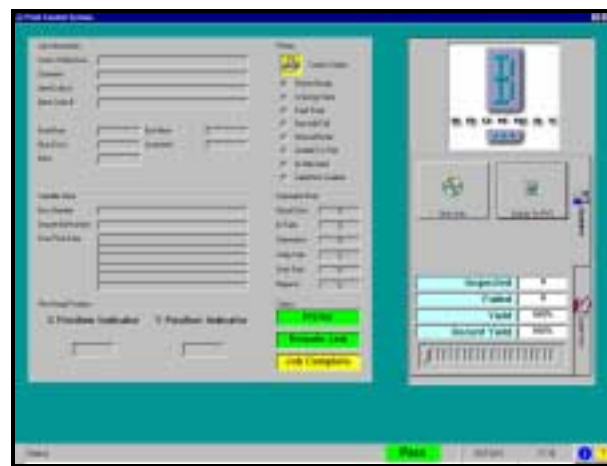
The system has a capacity of six input spindles and six output spindles with one reject spindle. All movements are mechanically synchronised and cam actuated for fast, reliable and quiet operation. Discs are held in vacuum nests to ensure accurate, quality printing

Verification

On the in-feed of the machine a code verification system is used to check the barcode on the inner mirror band of each disc in order to eliminate the risk of mixed product. Incorrect discs are rejected and new discs re-printed without compromising the sequence of the output discs. The code reader is compatible with most of the current optical disc formats including DVD-9 split codes. Other manufacturers IDENT code systems can be fitted as an option.

Control System

The control system allows the operator to start the process by scanning a barcode on the job sheet, which will then retrieve the job/personalisation information from the database. The operator can access status information and control the process through a menu driven graphical user interface (GUI). In the event of a power failure the control system will ensure that there is no data loss and that the jobs will re start without any loss of sequence integrity.



The control system is networked to an external PC and can generate management reports relating to jobs, throughput and errors.



Continuous Operation

Spindles can be loaded, unloaded and automatically changed without interrupting production, thus maximising throughput. A patented system of disc handling ensures no loss of production during spindle changes.

Ease of Operation

Settings are controlled via the tracker-ball and touch screen display on the front panel and simple mechanical adjustments allow for fast product changeover. The GUI is intuitive and simple to use. The operator easily teaches the correct disc orientation through the control interface in the initial set-up of the job. Faults can be diagnosed and easily cleared through help prompts.

Variable/Personalised Data Entry

Data may be supplied in the OP-10 database format or imported from a csv file.

Size Specifications:

- Length - 1.35 metres
- Width - 1.1 metres
- Height - 2.0 metres
- Weight - 1500 Kg.

Utility Specifications:

- Voltage - 220 VAC
- Frequency - 50 / 60 Hz
- Power - 16A (Approximately)
- Air - 6 bar (10 CFM at 80 PSI)

For further information, please contact:

Head Office

Bronway Ltd.
Bray Business Park,
Southern Cross Route,
Bray,
Co. Wicklow,
Ireland.
Phone: +(353)-1-2800 200
Fax: +(353)-1-2845 835

USA Office

Bronway USA
50 California Street,
Suite 1532,
San Francisco,
CA 94111
USA
Tel/ Fax: 415-277-5466

UK Office

Bronway Technology (UK) Ltd
Unit 1,
Cranfield Innovation Centre,
Cranfield,
Beds MK43 0BT,
UK.
Tel: +44 1234 756000
Fax: +44 1234 757679

E-mail: info@bronway.com

Web: <http://www.bronway.com>