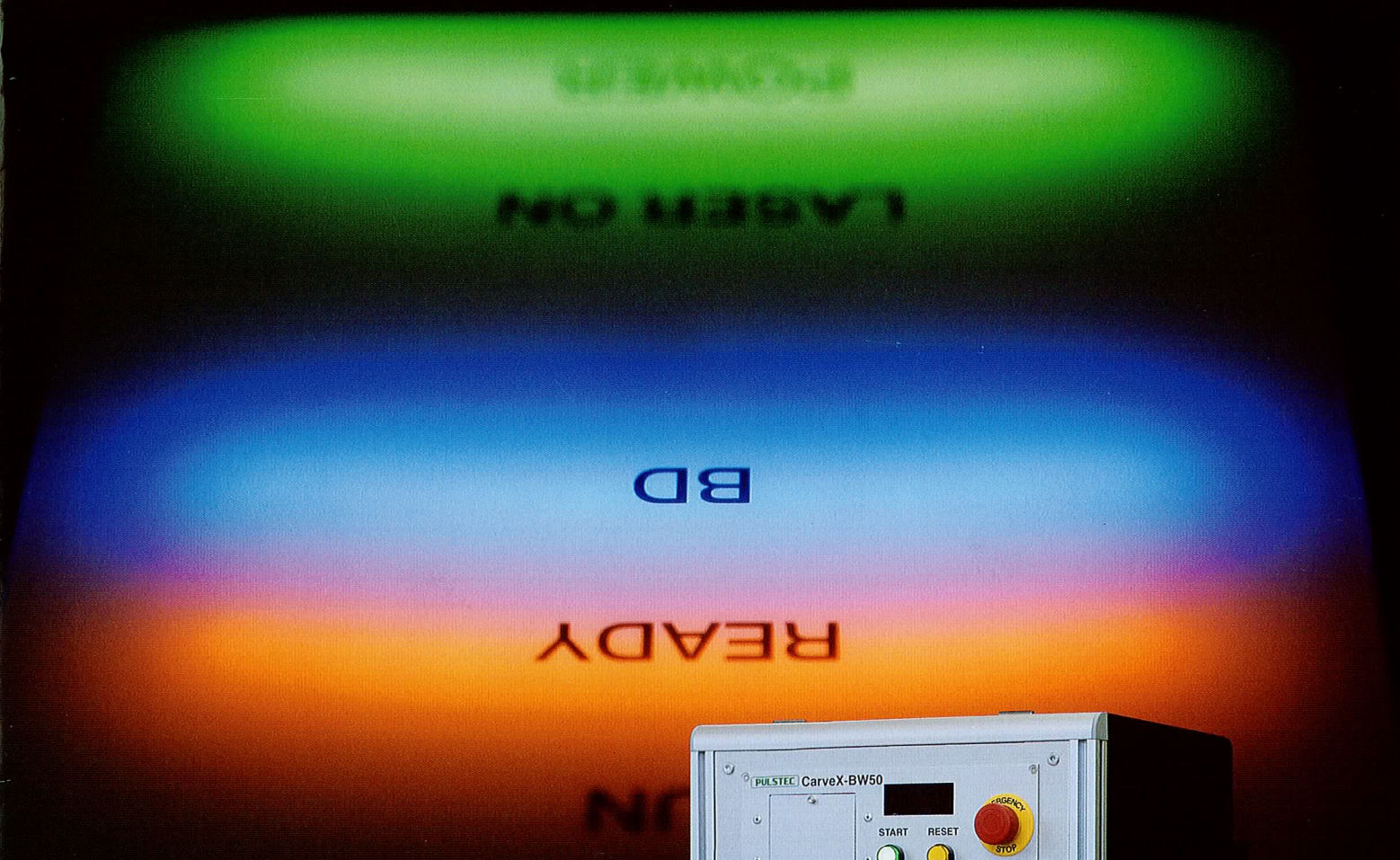
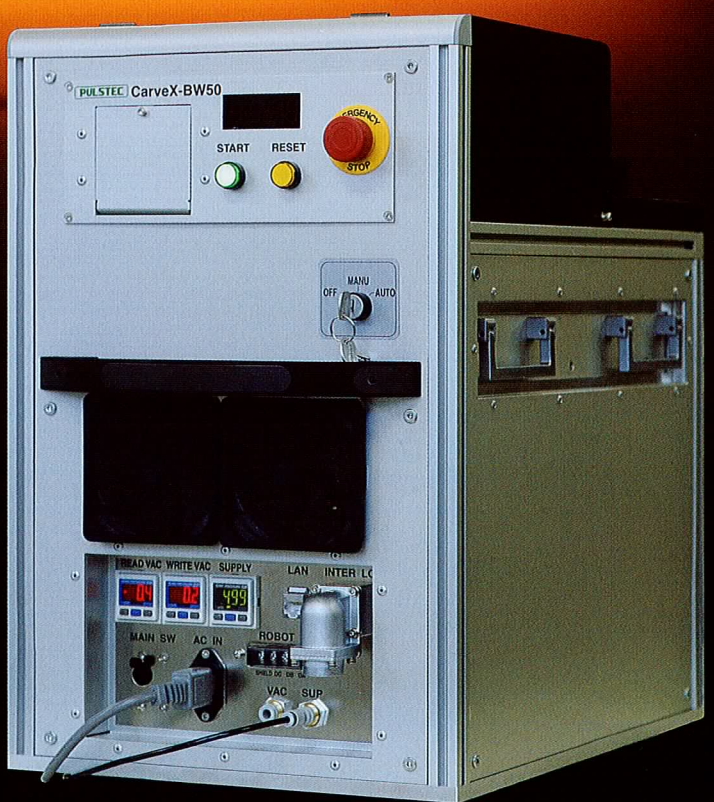
PULSTEC
Create New Value

BCA Writer for Blu-ray Disc

BW50P Series





Future BCA Writer is unsatisfactory only writing BCA on the disc.
It is also important to check quality of BCA writing correctly.
However, it must be made shorter tact and
more compact and productivity must be raised.
Pulstec has replied to such a demand.
It is called BW50P. This system would be
done both writing and checking at the same timing.

http://www.pulstec.co.jp/

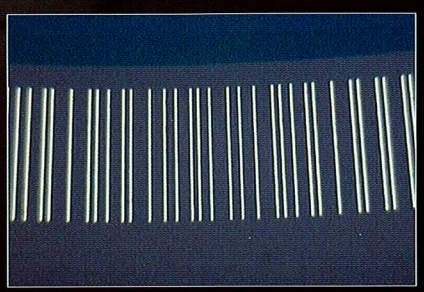
BCA Writer for Blu-ray Disc

BW50P Series

Necessity and importance of BCA

(BCA : Burst Cutting Area)

BCA is written on the inner area of the disc, and it is used for identify each disc. By using media ID, it is also useful for the copy protection or protection of copyrights. It is called duplicating restrictions. Moreover, the disc manufacturing side, it is important when and which factory manufactured the disc. Management can be simply done by writing in information, including a serial number etc by BCA. Furthermore, extendibility of BD is appealable by writing the internet connective key in the case of downloading the privilege contents of BD-ROM into BCA.



Feature

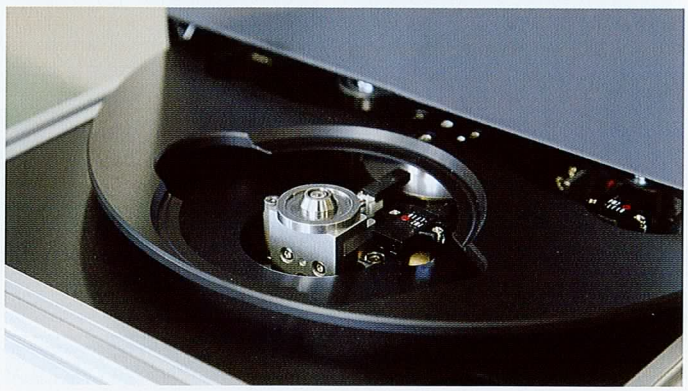
This system can perform write and signal evaluation of BCA at the same time.

Feature 1 Adopting rotation tray

Since the handling system is using the Original Disc guide and tray, therefore sensitive adjustment is not needed. Moreover, even if the handling system crashes, it does not have the influence on basic parts (motor etc.).

Feature 2 Writing and evaluating will be completed at the same timing

There are three stages on the tray (①delivery ②writing ③evaluation). Writing operation and operation of evaluation are controlled separately. Therefore, evaluation was done by another drives, and the short tact is realized. (Pat. Acquisition is finish)



System Line up

A system specifications are chosen for the types and writing characteristics of the disc.※1 Select criteria are depending on the disc. If the target disc can be supply before select the system, Optimal specification will propose from Pulstec.
There are two kinds Write Laser that the wavelength is difference. One of the laser is prepared as evaluation system for BCA evaluation only. Furthermore, the violet laser beam length can be possible to select. It is depending on disc characteristics.

● BCA Writer with Checker : Write+evaluation function

- BW50P ····· Using Infrareds LD (808nm)
  40um / Max power 6W
- BW50P-Blue ····· Using Violet LD (405nm)
  3um / Max power 350mW
  7um / Max power 500mW

● BCA Checker : Evaluation only

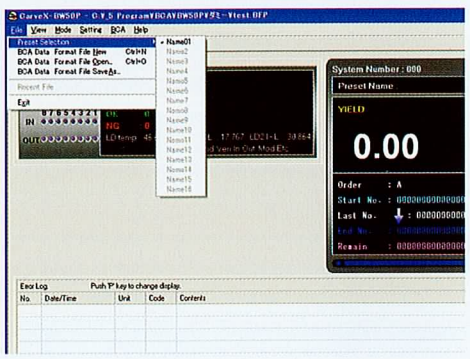
- BC50P ····· For BD-ROM(SL/DL) , -R(SL/DL) , -RE(SL/DL) support all types of Blu-ray media※2

※1 It is impossible to change specifications after purchase order has been placed
※2 Please provide target disc before place order.

Set up condition

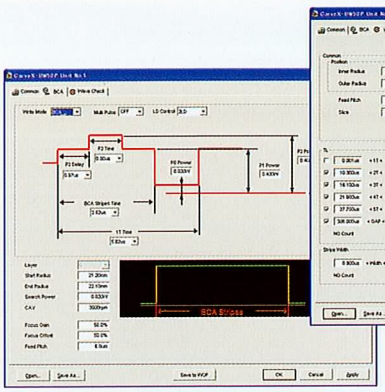
Easy to set

When using the preset function in that setting conditions are memorizable beforehand (max 16 sorts) and when power on and change the discs, easy to change the condition of Writing /checking. Moreover, setting mistake can also be prevented if this function is used.

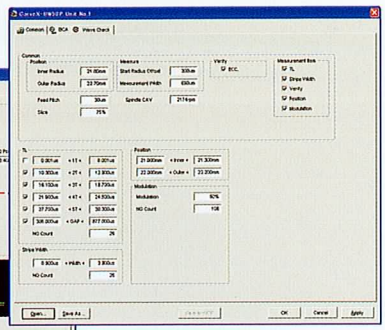


Individual Setting

When write on the new disc, or changed conditions, write with new conditions, it is possible to change conditions individually.
Moreover, it is made into a configuration file and it is possible to store and read out data.



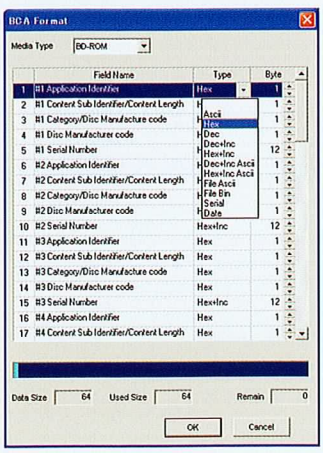
Writing condition setting

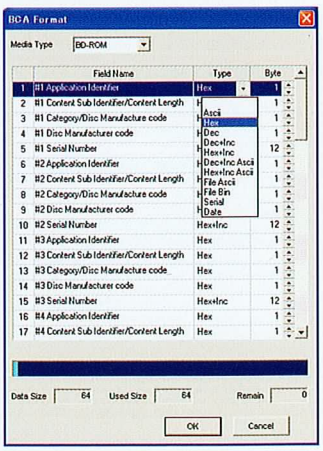


Evaluation setting screen

Input BCA DATA

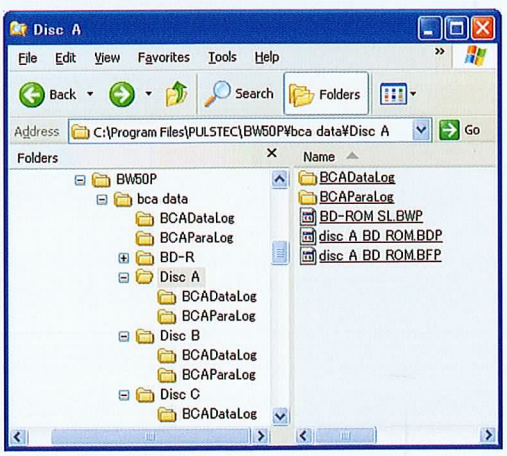
Possible to select and input format form (64byte)
Moreover, it is possible to input BCA data.





Easy to input and manage BCA DATA

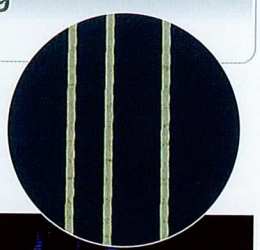
If the folder is made for each order and BCA data is saved in txt data, it can respond to sudden order edit smoothly. Moreover, even if it returns to the original order, it is possible to record BCA by the continuous serial.

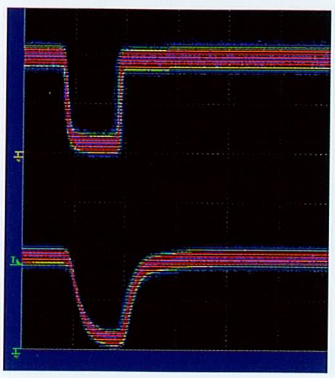


BCA Writing

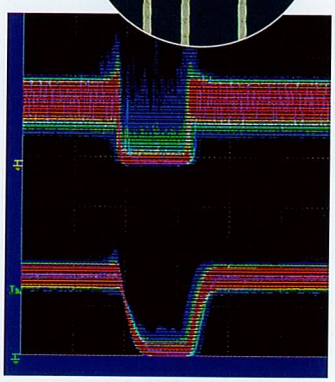
Fast and smooth writing

Example of Tact
BD-ROM : 3.2s
It is including write and evaluate.
※ it is related with media type or quality





BD-R



BD-ROM

※ Take data from Pulstec replica evaluation system (MASTER)
※ Upper waveform:Row waveform、Lower waveform:Wave form after filtered

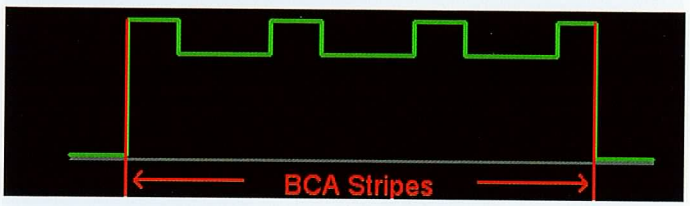
Three good reasons with Pulstec BCA

1 Use in house (original) PUH

The same PUH as the DVD & BD industrial defacto standard disc tester ODU of Pulstec is used.

2 Prepare many types of writing parameter

Each disc type has different optimal condition. Pulstec prepares abundant parameters and carry out variable of the conditions according to disc characteristics.



■ function1 : Defocus

It changes focus of beam and power, and function effective in the improvement disc characteristics that possible to control writing condition.

■ function2 : Write pulse changing function

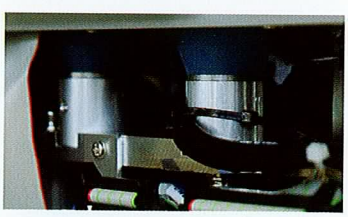
It can change the two-step stage, or the Castle from simple waveform, and can carry out variable according to the disc characteristics. Moreover, Violet laser diode model also has the Multi Pulse Function, and it can control more detail. It is possible to change writing condition. This is one of the effective steps to a disc.

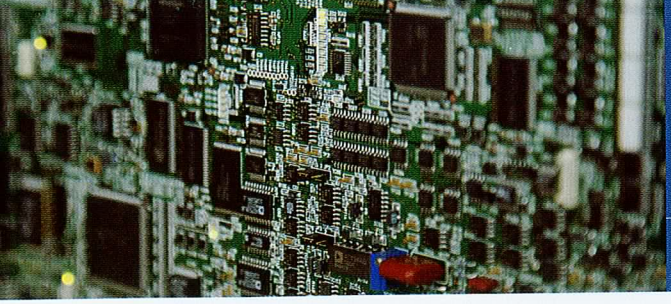
■ function3 : Feed pitch

The infrareds laser model can control by 1um step and 0.5um step with Violet laser model. Each model has different step to control volume of Beam. It is a very effective control to a weak to the beam crossing.
(others:Focus gain , Number of rotation , Write Position)

3 less vibration

With a damper, a line vibration is reduced and the quality of the BCA signal improves.





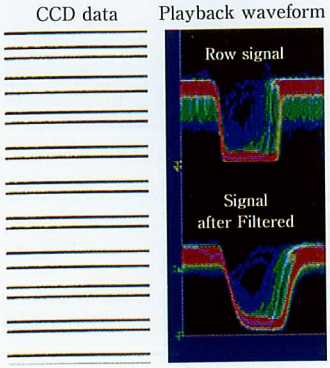
Evaluating BCA

Trustable judgment

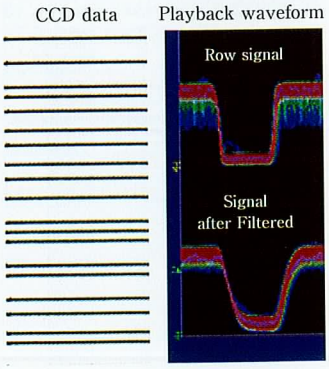
Using commercial drive PUH
Therefore, it is measuring by the same electric signal as a commercial drive, and is reliable. Using commercial drive PUH. Therefore, it is measuring by the same electric signal as a commercial drive, and is very reliable.It is also possible to recognize NG Disc that was not found in a measuring with the CCD camera of Last model.
(BW50P , BW50P-Blue , BC50P)

Compare with CCD measurement

e.g.1)
NG = [CCD→OK / BW50P→NG]



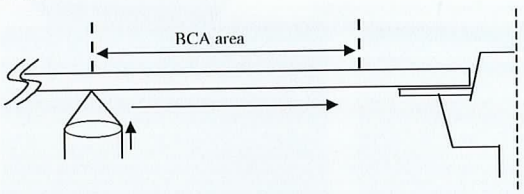
e.g.2)
OK = [CCD→OK / BW50P→OK]



※ This wave form takes from MASTER system

Evaluation Algorithm

Taking advantage of the measuring know-how of ODU※3 of PULSTEC, and MASTER※3, a BCA area is moved with high-speed writing area to unrecorded area, and all measurement complete with once action.



※3 ODU : Optical Disc drive Unit. This system is high-end tester that is adapted DVD and BD Verification Lab and Testing center.
It is possible to measure all items on the Book specifications.
MASTER : Basic system concept is same as ODU (using same optic and board) and lower price is realized.

Setting of Evaluation criteria

It is possible to set the evaluation conditions based on BD Specifications..

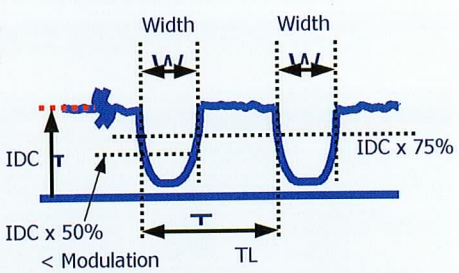


Image of setting based on BD Specifications

Measurement Items

BW50P / BW50P-Blue / BC50P

Item	Result	Value
BCA position (Inner/Outer)	OK／NG	IN○○.○mm～OUT○○.○mm
TL (2T,3T,4T,5T,Gap)	OK／NG	number
Stripe Width	OK／NG	number
Modulation	OK／NG	number
Verify※4	OK／NG	number
IDC	no judge	○○○※5

※4 Fixed value is possible to measure with BC50P (except Increment)
※5 A relative value is displayed.

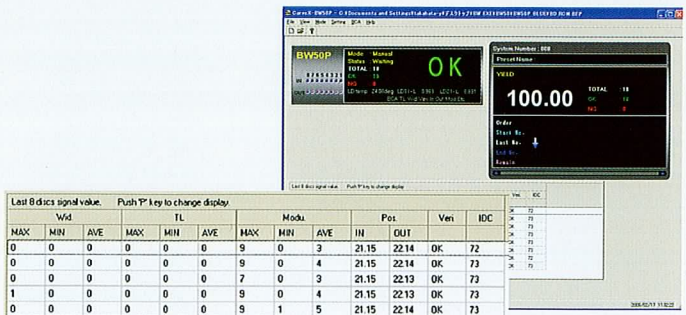
BCA Writer for Blu-ray Disc

BW50P Series

Easily comprehensible result

Result

Show the comprehensive result by OK/NG. And it is easy to confirm yield of production.
And result is displayed in real time for each disc with application also individual evaluation item.



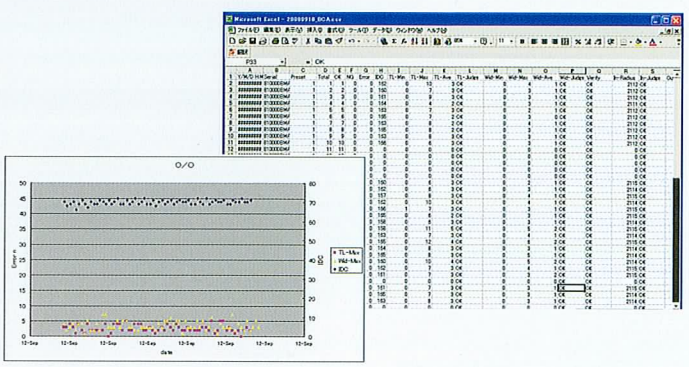
Last 8 discs signal value. Push 'F' key to change display

Wid			TL			Modu.			Pos.		Ver.	IDC
MAX	MIN	AVE	MAX	MIN	AVE	MAX	MIN	AVE	IN	OUT		
0	0	0	0	0	0	9	0	3	21.15	22.14	OK	72
0	0	0	0	0	0	9	0	4	21.15	22.14	OK	73
0	0	0	0	0	0	7	0	3	21.15	22.13	OK	73
1	0	0	0	0	0	9	0	4	21.15	22.13	OK	73
0	0	0	0	0	0	9	1	5	21.15	22.14	OK	73
0	0	0	0	0	0	12	0	3	21.15	22.13	OK	73
1	0	0	1	0	0	13	0	4	21.15	22.13	OK	72
0	0	0	0	0	0	10	0	4	21.15	22.13	OK	73

Log output

All data is saved as a log file, past manufacturing data can easy to check. And, easy to edit by Excel etc, if it is editing by log file.
(such as track record report and analysis)

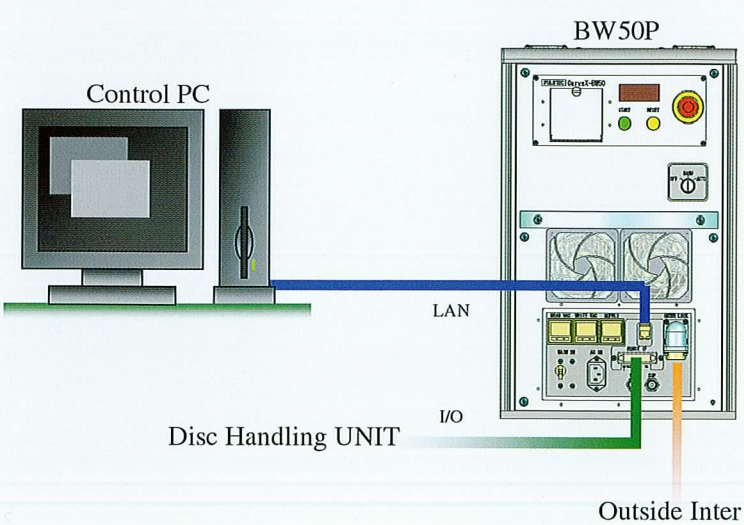
※ need Windows office etc



Example of hookup

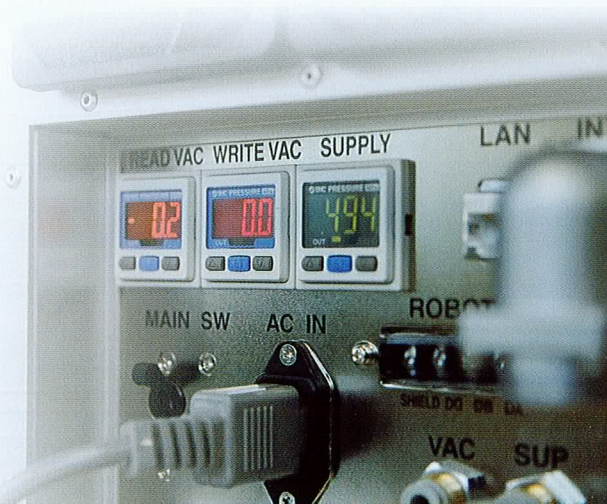
For OFFLINE

There are few number of manufacturing and, sample writing etc., manual operation is useful. Easy to hook up and possible to connect with system and control PC via LAN. (air is also needed)

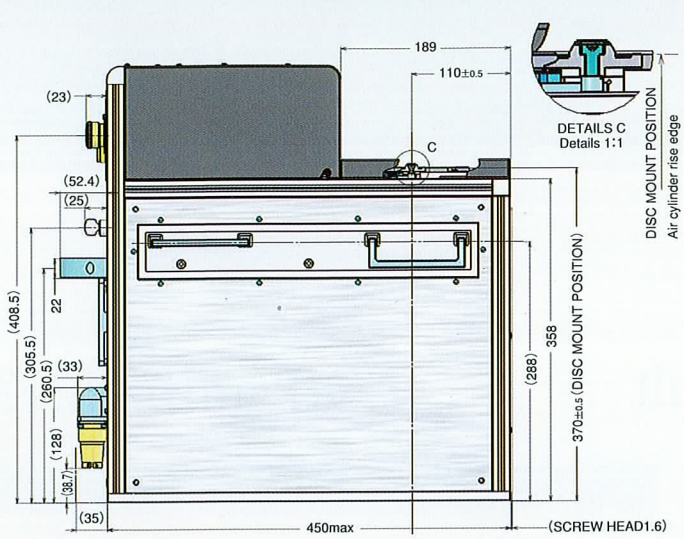


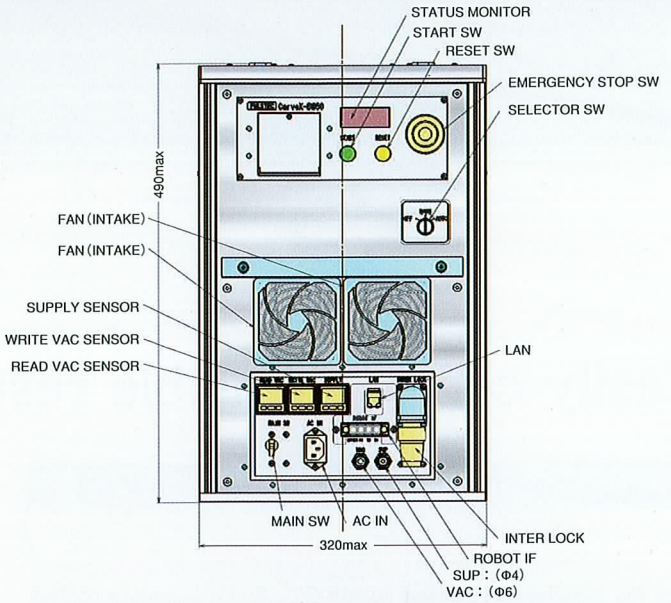
For INLINE

If it is needed to product discs with 24h. Handling system is also available and really useful.



Dimension





Specifications

Basic Spec

Power Supply	AC/DC	AC100～240V
	Consumption Current	Standby 2A (100V)
		Active 3A (100V)
Environment	Temperature	20～30℃
	Moisture	Lower than 80%
Air	Positive Pressure	0.5±0.05MPa
	Negative Pressure	Lower than-70KPa
others	Overvoltage	Category Ⅲ According IEC60664-1
	Pollution Level	Degree 3 According IEC60664-1
	Level of noixe	59dB
Size	Bady	W320×H490×D450mm
Weight	Bady	Appro×45kg

Table of function

		BW50P	BW50P-Blue		BC50P
Support Media	BD-ROM (SL/DL)	● ※6	△	△	●
	BD-R (SL/DL)	● ※6	● ※6	● ※6	●
	BD-RE (SL/DL)	● ※6	● ※6	● ※6	●
R/RE	LD Wave length [nm]	808	405		—
	Beam spec	40×1um	3×1um	7×1um	—
	Max power [W] ※7	6.0	0.3	0.4	—
	Write strategy	●	●	●	—
	Multi pulse	—	●	●	—
	MaxRPM [r/min]	3,000	5,000	5,000	—
	Defocus	●	●	●	—
	Feed pitch min step [um]	1.0	0.5	0.5	—
ROM	Width check	●	●	●	●
	TL time check	●	●	●	●
	Modulation check	●	●	●	●
	Position check	●	●	●	●
	Verify check	●	●	●	● ※8
	IDC monitor	●	●	●	●

※6 Depending on the disc characteristics, it may be satisfied in possible to write
※7 Power is on the surface
※8 Fixed data (except Increment)

Safety Precautions

●The Class 1 Laser is used in this system (based on JIS C6802:2005/IEC60825-1:2001). Looking at the laser beam with optical instruments such as a loupe, magnificent microscope, and microscope etc could cause a severe injury such as a degradation or loss of eyesight.
●Please read the "User's Manual" carefully prior to using the system. ●Avoid installing the system in areas with water, moisture, dust, or soot. It may result in fire, electric shock, or equipment breakdown.

PULSTEC Create New Value
PULSTEC INDUSTRIAL CO.,LTD. http://www.pulstec.co.jp/

■Hosoe Technology Center
7000-35 Nakagawa,Hosoe-cho,Kita-ku,Hamamatsu-city,Shizuoka Pref.,Japan 431-1304
PHONE：+81-53-522-3611 FAX：+81-53-522-5622

■Pulstec USA,Inc.(Torrance,CA)
Hawthorne Blvd Suite 375 Torrance CA 90503 U.S.A

■Euro Office Pulstec Industrial Co.,LTD.
Office1812 Devon Place Newport,South Wales.NP20 4NN U.K.

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