



DC SERIES User's Guide

This document contains all of the information you need to connect and use a DC series reader. If you have specific questions concerning the reader which are not found in this manual, please contact the **dealer** you purchased this product from. You should contact the dealer first because the reader you have purchased may have been modified or re-programmed by the dealer after it left IBC.

If your dealer cannot supply you with the information you need, then feel free to contact IBC directly by phone, fax, or through e-mail.

Update information on all IBC products, as well as utility software can be found on our internet pages at <http://interbar.com>.

Thank you for purchasing an IBC product. In order to serve you better, we welcome all comments you may have concerning our products and manuals. Please send your comments to IBC using e-mail to comments@interbar.com.

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FUNCTIONALITY

The DC readers are stand-alone/portable readers which may be used for any type of data collection where portability is required.

Major features of the DC products are:

- 128k bytes battery backed-up RAM storage for saving transactional data.
- Time and Date stamping for all transactions.
- RS232 serial port for uploading data.
- RS232 logging to a printer (SSLOT-DC only).
- Easily programmed using serial commands.
- Notification of duplicate reads (SSLOT-DC only).
- 10 year lithium battery backup for memory.
- Red and Green status leds.
- "J" series reader emulation.
- 2 unique ID numbers for data identification (SSLOT-DC only).
- Password protection (SMAG-DC only).
- Straight text or comma-delimited upload formats

The **DC** readers contain 128k of memory in which data transactions are stored. Every time a barcode is read, or a magnetic stripe is read, the data read is stored into the memory, along with an optional date/time stamp, and an optional 5-character Identifier.

The reader can be programmed to accept specific length cards, or programmed to accept all card lengths up to a specific maximum, as well as specific barcode symbologies. Programming of the barcode or magnetic stripe selection information is achieved by using the same command set for "J" series readers.

Both the SMAG-DC and the SSLOT-DC are available with either a DB9 cable for communications and power, or two jacks

on the side of the reader for power and communications cable connections, which allow them to be used as portables with an external battery or an ac adaptor. A third version of these readers is available with an internal 9-volt battery (fully portable model).

For applications where the readers will be used to collect data at stationary points (time and attendance, trade show lead gathering, training class attendance), where ac power is available, the model with side jacks is the preferable model as an ac adaptor can be used to power the reader.

If ac power is unavailable for any short period of time, a 9-volt battery may also be used using a special 9-volt adaptor cable offered by IBC.

Models which have the internal battery operate off of a 9-volt battery, which is housed in a small compartment located on the bottom of the reader. This model also has an on/off switch located on the bottom of the reader, so you can turn the reader off and conserve power when the reader is not in use. Using an internal 9-volt battery, the SSLOT-DC and SMAG-DC are completely portable. The SMAG-DC will operate for approximately 8 hours with a 9-volt battery. The SSLOT-DC will operate for about 6 hours using a fully charged battery.

Both readers can operate in "J" reader emulation mode. In this mode, the reader will operate like a standard IBC "J" series reader, utilizing the same command sets and functionality as a standard "J" reader.

A built-in memory protection feature notifies you when the reader is full, and data must therefore be uploaded to a PC.

There are 2 leds (red and green) on the reader, which are used to notify you of a good read, as well as duplicate reads (SSLOT-DC only), and notification of when the reader is full.

You can upload the transactional information in the DC reader into your computer easily by writing a simple program to upload the data. Also, you can utilize one

of the IBC utility software programs for this purpose.

SSLOT-DC readers can be programmed to upload the data in a straight text format (no delimiters), or in a comma-delimited format.

Be aware that data uploaded from a DC reader is **not** cleared until you specifically tell the reader to clear itself.

With the SSLOT-DC, you can optionally program it to notify you when a card which is read is already in the memory (duplicate read).

Also, with the SSLOT-DC, rs232 logging is supported, as well as a feature to clear the memory using a special barcode.

The SSLOT-DC also contains a feature for the embedding of 2 ID fields which are 5 characters in length each. These ID fields can be used for holding static information such as a reader identifier, or maybe an event code or training class code. They can be changed through a serial command and also with a barcode. Optionally, the reader can be programmed to return the ID fields along with each uploaded record, for easy sorting of uploaded data. The SMAG-DC contains a similar feature, for the storing of 1 5-character ID.

The SMAG-DC has a password feature, which allows you to set a 5-character password in the reader. Once this password is set, you cannot reset the reader, upload any data, or reprogram the reader without first resetting the password (see Password section).

COMMUNICATION

Communications to/from the DC readers is achieved using RS232, either with an attached cable, or an IBC-supplied cable which connects to the RS232 communications jack on the side on the reader.

For models with internal batteries, this jack is on the bottom of the reader. For models with an external battery (or ac adaptor) this jack is on the side of the reader.

Please do not confuse the two jacks. The power plug is smaller than the rs232 plug and therefore it is possible to put the power plug into the rs232 jack (although it won't fit very well). Doing this can cause damage to the reader.

All communications to/from the DC readers is done at a baud rate of 9600 baud with the settings 8 data bits and no parity.

You can communicate with the readers using your own software, software provided by your dealer, or using one of the IBC utility packages located on our website.

If you are testing communications with the reader and it appears that you are not communicating, first check the communications cable to be sure it is seeded properly in the jack on the DC reader. If it looks ok, try sending the "J" series command "V" to the reader (followed by a carriage-return), which tells the reader to return its' firmware identification. After sending the V command, the return should return its' internal identification.

LED'S

DC readers contain two leds on the front of the reader - one red and one green.

During normal operation, these leds are off. The Green led will turn on after a good read. The red led will turn on if the unit is full, and also for a bad read. In the case of a SSLOT-DC running in "duplicate checking" mode, the red led also will turn on when a duplicate card has been scanned.

While in the "J" emulation mode, both leds are normally off, and operate according to the "J" programming defaults which you have programmed the reader to.

WEATHERPROOFING

Weatherproofed units are weather-resistant and not completely weatherproof. Avoid direct contact with continuous rain and/or ice/snow by providing some protection.

If you have a unit with power and communication jacks on the side, be sure to protect them so that water cannot enter the reader.

Units which are not ordered as weatherproofed readers can become damaged if water enters the reader through one of the jacks. Avoid using the reader under any condition that will allow water to enter the reader.

CLEARING MEMORY

The memory of the DC readers can be cleared at any time using a serial command. Additionally, in the SSLOLT-DC, the reader can be cleared by scanning in a special barcode. See the **SSLLOT-DC Barcode Memory Clear** command under the programming section for instructions on clearing the memory with a barcode.

PASSWORD

The **SMAG-DC** has a password protection feature which allows you to set a password in the reader. The SSLLOT-DC does not currently have this feature but it will be added in for the next version.

When you set a password, the reader is protected and you cannot upload data,

reset the reader, or program the reader in any way until you reset the password back to its' default of "00000".

If you do not need the password function, then simply do not set the password. By default, the password is set to "00000" which means password disabled.

If you want the password protection, then after performing your uploading functions, set the password to whatever you want. The reader is then protected until you set the password back to "00000".

DUPLICATE READ FEATURE

The SSLLOT-DC has an additional feature which is not in the SMAG-DC. This feature allows you to activate **duplicate read** checking. When this feature is activated, every barcode which is scanned in is checked to see if it has already been scanned in (already in the memory). If it is, the red led will flash informing you that the duplicate read has occurred. This is useful when the SSLLOT-DC is used for scanning barcodes in an entrance to a facility, so that the same barcode is not used twice for admission.

RS232 LOGGING

An additional feature in the SSLLOT-DC allows you to print to any RS232 device each transaction as it is occurring. When this feature is turned on, and a barcode is scanned in, the reader will send out the rs232 port the date and time as well as the card number scanned. This is useful for providing an audit trail for all scans.

INTERNAL IDs

An additional feature in the SSLOT-DC allows you to set 2 different internal ID numbers (each 5 characters long). These ID numbers can optionally be stored and transmitted with each card scan. The ID's may be used to store reader identification codes, or event codes, so that uploaded data can be re-sorted and then grouped by the codes. You can set these IDs using a serial command, and also with a barcode.

An additional feature in the SMAG-DC allows you to set 1 5-character ID field which can be stored along with each record.

PROGRAMMING

The following commands are commands which are specific to the DC reader series. For commands relating to specific symbologies, as well as magnetic stripe track selection, consult the "J" series manual. Please note that commands must be sent to the reader serially, unless otherwise noted.

All serial commands must be sent followed by a carriage return (hexadecimal 13), unless the reader is set up in protocol mode (for networking, with reader addressing).

All DC readers, by default, are shipped from the factory set up in non-protocol mode. If you wish to change the readers to operate in protocol mode - you must re-program them.

Some of the commands which are sent to the reader will receive responses back from the reader. Other commands will not. If a response is generated, the possible responses are listed here with each command.

● *Reset Record Size and Clear Memory*

This command resets the reader, clears the memory in the reader, and sets the record size for data in the reader. The minimum allowable id size is 4, and the maximum is 150 for the SMAG-DC, 30 for the SSLOT-DC. By default, the reader id size is set to 150 for the SMAG-DC, and to 20 for the SSLOT-DC. The format of this command is:

SMAG-DC
SSLOT-DC

\ssst3
\ssst12

where: sss= id size (4-150)
where: sss= id size (4-21)

t = time stamp, 0=off, 1=on
1=ID1, 0=don't include, 1=include
2=ID2, 0=don't include, 1=include
3=ID, 0=don't include, 1=include

In a DC reader, there is 128K of memory available for storage. Some overhead is associated with storing data and therefore the full 128K is not available for use, but a good rule to use when calculating record size is that 120K will always be available. To calculate the number of records which you will be able to store, divide 120000 by your record size. If you also have date and time stamping on (default in SMAG-DC, optional in SSLOT-DC), add 6 to your record size when doing this calculation. Additionally, for the SSLOT-DC, add an additional 5 characters if you want ID1 included with your data, and an additional 5 if you want ID2 included with your data. For the SMAG-DC, add 5 characters to your data record size if you are also storing the ID.

Please note that **sss** above is the record size exclusive of the time/date stamp, ID1, or ID2.

This command also clears the memory and all memory counters, so after executing this command, all transactional data in the reader is lost - so use this command wisely.

Please note that in the SSLOT-DC, this command is the only command which can be used to set ID1 or ID2 to be included in the data. Telling the reader that you want the ID1 field, and/or the ID2 field in your data stream cannot be done when there is data in the reader, without losing the current data in the reader. This is because the memory in the reader is pre-allocated to a specific record size. So, if you want to include the ID1 or ID2 fields, it has to be set using this command, when a reader is empty. The same applies to the date and time stamping.

Also, do not confuse this reset command with the "J" series reset command - although you can still issue the "J" series reset command (null-U), that command will reset not only the DC parameters defined in this manual, but also the standard "J" parameters in the reader (symbology selections, magstripe selections, etc...).

Note that for Version 8 of the SMAG-DC, the `\ssst` reset command used in prior versions will also work, and if it is used, the Internal ID setting is set to "don't include".

● **Set Time**

This command sets the time in the time clock in the reader. The format of the command is:

+yymmddhhmmssw where:

yy	=	year
mm	=	month
dd	=	day
hh	=	hour
mm	=	minute
ss	=	seconds
w	=	day of week (1=monday,7=sunday)

You should always reset the time in the reader after getting the reader from the factory, because the time is not always set at the factory prior to shipment.

This command returns the following:

T-bad time
O-time set

● **Set Mode**

This command sets the operating mode of the reader - DC, or "J" emulation mode. DC readers can be set to either DC mode or "J" emulation mode. Please note that you should upload any data you have in the reader prior to issuing this command.

The format of this command is:

|m where: m = 1 ("J" emulation mode)
2 (DC mode)

The format of the command is:

l (lowercase L)

For the SMAG-DC, the command returns:

YYMMDDHHMMSSiiiiiiiiiii... where YYMMDDHHMMSS is the date/time
iiiiiiii... is the data scanned in
or END

For the SSLOT-DC, the command returns:

YYMMDDHHMMSS1111122222iiiiiiiiiii... where YYMMDDHHMMSS is the date/time
11111 is the ID1 field
22222 is the ID2 field
iiiiiiii... is the data scanned in
or END

A carriage return is always found at the end of the transmission.

After all items have been uploaded, this command returns END.

For the SSLOT-DC, if date and time stamping is not on, and/or ID1 or ID2 are not on, then only the data is returned. If any of the optional items (date/time, ID1, ID2) are turned on, then they will appear in the data stream in the order shown above.

For the SSLOT-DC, if comma-delimited records are being sent, then commas will follow every field except the data field.

To upload all information in the log - first issue the **lr** command for a reset to the beginning of the log, and then continue to issue **l** commands, reading the data, until you receive the last record which will be **END**. Once you are sure that you have received all of the data, then clear the log with the **cl** command. Please note that during the time that you have uploaded data, another transaction could have occurred in the reader (if the reader is being polled on line) - so therefore it is a good idea to, just before you clear the log, issue another **lr** command and then a **l** command to make sure that there is no new data in the reader. If there is not, then you will get the **END** again, otherwise you will get the new data.

● **SMAG-DC Password Control**

Version 3.x allows for the setting of a 5 character password in the SMAG-DC. Once this password is set, you cannot upload from the reader, or reprogram the reader in any way until the proper password is sent to the reader. The following commands are used for doing this, along with checking the reader to see if it is password protected.

\$xxxxx where xxxxx is the password, disables the password in the reader so that you can upload and reprogram. Be aware that once the reader is turned off, the password protection will go back into effect

so you must do this every time you start a communication session with the reader.

\$ooooonnnn changes the reader password from ooooo to nnnnn

p returns a status character telling you if the reader's password is enabled. Returns a "0" for password not enabled, "1" for password enabled.

● **SSLOT-DC Comma Delimited Mode**

The data uploaded from a SSLOT-DC can optionally be comma-delimited. To set or reset this option, use the following command.

yx where x="0" for not comma delimited (default) and "1" for comma delimited.

● **SSLOT-DC Return Record Size Settings**

x will return the record size settings

ssst12 where sss is the record size
t is the time setting option
1 is the ID1 setting option
2 is the ID2 setting option

● **SSLOT-DC ID Settings**

To set the internal ID fields, or return the value of the ID fields, use the following commands.

<null>1xxxxx	sets ID1 to xxxxx	<null>=binary 0
<null>2xxxxx	sets ID2 to xxxxx	<null>=bianry 0
w	returns the ID settings, ID1 followed by ID2	

The IDs may also be set by using a barcode. To set the IDs, you must make a barcode in [code39](#) with the following format:

%U1xxxxx	sets ID1 to xxxxx
%U2xxxxx	sets ID2 to xxxxx

These commands can be used at anytime even if there is data in the reader. If you have some data already in the reader, and then change the IDs, all data entered in after you have done this will show up with the new IDs. The ID data for the previous records will remain undisturbed.

● **SSLOT-DC Barcode Memory Clear**

The SSLOT-DC memory can be optionally cleared by using a special barcode control card. The

This is a handy feature to use if you are collecting multiple sets of data in the reader. For example, if you are collecting attendance at two training sessions, and do not plan on uploading and clearing data between sessions - you can scan in one control card to set the ID for the first session, and then scan in a different control card prior to the second session. This way, you will be able to easily differentiate the data when you upload it.

To change the control number that the reader searches for on the magstripe, you can send the reader the command:

`<null>9xxxxx` sets control number to xxxxx `<null>=binary 0`

If you want to turn off the control number, so that the reader will not look for these control cards at all, set the xxxxx to blanks.

The default control number in the reader is 99999. Therefore, if you scan in a card which has 9999912345 on it, the ID will be changed to 12345.

If you will be scanning in 10-digits cards as data, it is important to select a control number which will not appear as the first 5 digits on your cards. In some applications, this will not be possible. If it is not possible, the ID can be set by encoding the `<null>8` command on the magstripe, using the track 1 character set. This is done by encoding a card with the value `%U8xxxxx`, where xxxxx is the new control number. This method should be used only if you cannot use the 10-digit format described above.