



TCP/IP Readers User's Guide

This manual provides information on how to setup, program, and interface IBC readers with internal tcp/ip communication chips. This is a supplemental manual which should be used along with the manual for your specific reader.

Additional copies of this manual can be obtained by contacting IBC or an authorized distributor. This manual may not be copied or duplicated in any way without the express written consent of IBC.

Revision pages of this manual are marked in the lower center of each page, noting the current revision level, and revision date.

Any revisions made to this document which refer to specific versions of the tcp/ip firmware are marked throughout the manual.

Any errors or omissions from this manual should be noted and sent to the Technical Services dept. of IBC for correction.

If you need any additional information concerning the tcp/ip readers, contact IBC's Technical Support department from 08:00 to 17:00 Eastern Standard Time, at 860-659-9660, or e-mail us (support@interbar.com). Technical information and update information is also available on the internet at our home page <http://interbar.com>.

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Product Description

IBC readers with tcp/ip connectivity contain an embedded ethernet chip which allows direct tcp/ip communications with the reader.

The embedded chip operates independently from the reader. It's only function is to provide bi-directional communications between the reader and a tcp connection.

This makes the tcp/ip connection "transparent" to the reader. Once a connection is made through a tcp/ip socket, normal serial communications to and from the reader can occur. There is no change in the command set or functionality.

Functionality

There are two tcp/ip ports supported in the reader. One port is for data communication and the other port is for programming the tcp/ip configuration parameters.

When you are communicating directly with the reader, you will be using the "data port", which defaults to tcp port 57. All data which is sent to this port is passed through directly to the reader. All data transmitted from the reader will also be transmitted out this port.

The reader operates in a server mode. This means that you must look like a client to the reader. Once you establish a connection to the reader's data port, you can start bi-directional communications.

Note that although tcp/ip is an ack/nak protocol based transmission, it is still possible to loose data with tcp/ip connections. Physically connecting a tcp/ip reader to a network does not imply that reader data is automatically transmitted to a "receiver" on the network. For tcp/ip communications to operate properly, there needs to be a "socket" connection between the reader (server) and a client.

For example, if you were to take an rs232 output reader, power it, and scan barcodes without connecting the reader to the serial port the data would be lost. The same thing will happen if you connect a tcp/ip reader to a network and you do not have a server-client connection established.

For "J" series readers, the server-client connection needs to be active at all times. For stand-alone readers, the connection needs to be active only when uploading and downloading occur.

Programming

The following parameters can be reprogrammed in the tcp/ip reader:

- IP Address
- Data Port
- Control (programming) Port
- DHCP mode
- Connection Speed

Programming is achieved by either sending commands to the reader, or by using IBC's tcp/ip programming utility software.

The defaults for the programmable parameters are as follows:

IP Address	192.168.1.55
Data Port	57
Control Port	87
DHCP	OFF
Speed	10baseT half duplex

Prior to changing any of these parameters, it is suggested that you first connect to the reader using these default settings, and verify reader operation. If you are passing through a router or firewall to get to the reader, you may have to set up the firewall or router to allow communications with the default port 57 in order to do this.

The IP address can be changed to any ip address. The subnet mask, however, is preset to 255,255,255,0. This cannot be

reprogrammed. The data port and control port can be changed to any port below 50000.

DHCP can be either on or off. The default is OFF and it is recommended that you do not use DHCP unless necessary. This is because the ip address may dynamically change if DHCP is used.

By default, the speed is set to 10baseT half-duplex. This setting can be changed to 100baseT half or full duplex as well as auto detect. Please note that some switches are "auto sensing" and not "auto negotiate". If you set the reader to auto negotiate and connect to an auto sense switch, it is possible that the switch will not be able to sync with the reader.

To program the reader you can either establish a connection to the control port (default port 87), or use IBC's tcp/ip programming utility. If you elect to program the reader directly without the programming utility - you will have to connect to the reader on the control port, and then send the appropriate commands.

The control port of the reader is password protected. Prior to reprogramming, the proper password must be sent using the PASS command.

One command can be sent to the reader without sending the proper password. This is the IBCR command, which returns the Version Identification string for the embedded tcp/ip chip. Do not confuse this version string with the version string sent by IBC readers with the V command.

The password is a 5-digit number which can be reprogrammed. Once the password is sent to the reader and verified, programming of the reader can commence. The default password is 11111. It is recommended that you change this password once you set up the reader. Please note that if you forget your password there is no way to recover. You will not be able to reprogram or reset the reader if you forget your password.

Note that each command must be followed by a c/r (hex 0d). The reader will respond with OK if the command is accepted.

The command set and structure of the commands are listed on the following page.

Command Set

The following commands do not require that the password be sent:

IBCR	Returns the reader version identification followed by the IP address. For version 1.0 the reader will return IBC TCP V1.0:192.168.1.55
CON	Returns the reader connection speed the reader is connected at. This is not the programmed connection speed, but rather the actual speed that the reader connected at. The response can be any of the following: 10HD, 10FD, 100HD, or 100FD
PASSxxxxx	This command sends the password xxxxx to the reader, so that the reader can be reprogrammed.

The following command require that the password has already been sent:

MAC	Returns the reader's MAC address as 6 8-bit characters
SPEEDx	Changes the reader connection request speed to x, which can be: 1 - 10 half duplex 2 - 10 full duplex 3 - 100 half duplex 4 - 100 full duplex 5 - auto negotiate
NEWPASSxxxxx	Changes the password to xxxxx
CIPxxx.xxx.xxx.xxx	Changes the reader IP address
DPTxxxxx	Changes the reader data port number
CPTxxxxx	Changes the reader control port number
DHCPX	Turns DHCP on or off (0=off, 1=on)
STAT	Returns all settings in the reader in the following format:

- 1 character major version identifier
- 15 character IP address
- 6 character mac address (8 bit bytes)
- 5 character data port
- 5 character control port
- 15 character gateway address (unused in V1.0)
- 15 character server address (unused in V1.0)
- 5 character server port (unused in V1.0)
- 1 character mode (always 1)
- 1 character programmed speed indicator
- 1 character DHCP indicator
- 5 characters (reserved)
- 5 character tcp version identifier

NOTE once you have changed parameters, you must unpower the reader and then power up again for the new settings to take effect.

Using the IBC TCP/IP Utility Software

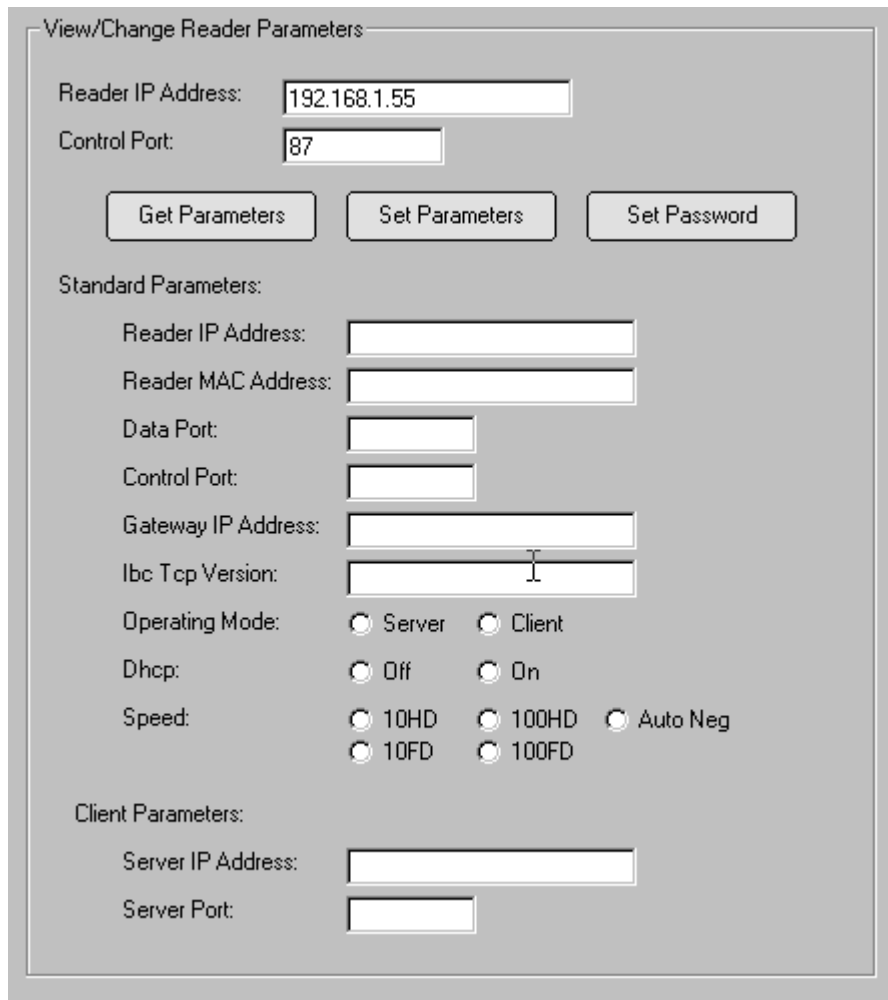
The IBC TCP/IP Utility software can be found on IBC's internet software page. This software can be used for reprogramming the tcp/ip parameters in a reader, as well as searching for readers on the network. The search function is extremely useful if you have programmed a reader but forgotten the IP address.

Reader Search Function:



The Reader Search function will search on the network for any device that responds to the IBC query command IBCR, on the selected control Port. All IBC TCP/IP devices will respond to this query. The Fast Mode option can be checked for networks which do not have much traffic. Unchecking this box slows down the search for networks that are congested.

Reader Programming Function:



View/Change Reader Parameters

Reader IP Address: 192.168.1.55

Control Port: 87

Get Parameters Set Parameters Set Password

Standard Parameters:

Reader IP Address:

Reader MAC Address:

Data Port:

Control Port:

Gateway IP Address:

Ibc Tcp Version:

Operating Mode: Server Client

Dhcp: Off On

Speed: 10HD 100HD Auto Neg
 10FD 100FD

Client Parameters:

Server IP Address:

Server Port:

To read the parameter settings in the reader, or reprogram them, you must enter in the IP address for the reader and the Control Port number, and then hit the get parameters button. You must know the password in order to get the parameters. After clicking the button, the software will ask you for the password and the correct 5 digit password must be entered. If the reader is connected, the parameters will be shown.

For Version 1.0 TCP/IP readers, you can change the IP address, data port, control port, speed setting, and DHCP setting. All of the other parameters are reserved for future expansion.

To change the password, use the Set Password button.

Note that once you change parameters, you must unpower the reader and then power the reader again for the new settings to take effect.