Instructions For Use

Power Processor
Generic/IDC and DxI Connection Modules

For *In Vitro* Diagnostic Use

CE

A97260AD
June 2019

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BECKMAN COULTER

Power Processor
Generic/IDC and DxI Connection Modules
Instructions For Use
PN A97260AD (June 2019)

Trademarks

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Rx Only

Original Instructions

What's New in this Release

These instructions apply to Power Processor systems with the latest software version listed in this document, as well as previous software versions. When a subsequent software version changes the information in this document, a new issue will be released.

A97260AD, June 2019
This Instructions For Use manual is for Power Processor used with PrepLink software Version 5.0.

Changes:

- **Safety Notice:**

  Removed Moving Parts Label from the Hardware Labels section. Moved it to "Legacy Hardware Labels" table.

  Replaced the Moving Parts symbol to Crushing of hands symbol in the Symbols Glossary table

  Added the California Proposition 65 symbol to the Symbols Glossary table

  Removed the Country of Origin symbol from the Symbols Glossary table

A97260AC, March 2018
This Instructions For Use manual is for Power Processor used with PrepLink software Version 5.0.

Changes:

- **Safety Notice:**
  Added a symbols glossary to address changes to global labeling requirements and identify the symbols that relate to product identification, classification, cautions, and warnings.

Initial Issue
A97260, June 2011
This is the initial release of the *Power Processor Generic/IDC and DxI Connection Modules Instructions for Use*, PN A97260 (June 2011).

This document was created as part of the reorganization of the current *Power Processor Instructions for Use* manual, PN 968232, to improve the content and usability of these instructions, and the method by which this information is delivered to our customers.

Information that was previously contained in the *Power Processor Instructions for Use* manual, PN 968232, is now available as a *Document Set* of separate Power Processor IFU manuals, each specific to the individual Power Processor modules.

Material that is generic to the entire Power Processor system is contained in the *Power Processor General System Operation IFU* manual, PN B01683.

The new Document Set of Power Processor Instructions for Use manuals includes the following:

- *General System Operation IFU,* PN B01683
- *Inlets, Outlets, Hematology, and Barcode Verification Modules IFU*, PN B01519
- *Centrifuge Module IFU*, PN A97119
- *Decapper and Recapper Modules IFU*, PN A97252
- *Aliquot Module IFU*, PN A97103

- *LX and DxC Connection Modules IFU*, PN A97111
- *AU Connection Modules IFU*, PN B01540
- *Generic/IDC and DxI Connection Modules IFU*, PN A97260
- *Stockyard Modules IFU*, PN A97244

Documentation Changes for Generic/IDC and DxI Connection Modules

Significant new, or changed, Generic/IDC and DxI Connection Module information that was not in the Power Processor IFU, PN 968232, include the following:

- New Rack Assignment information.
- Improvements to the "Stop Button Recovery with Instrument Connections" procedure.
- Improvements to the "Stop Button Recovery without Instrument Connections" procedure.
- Centaur Connection module hardware description and error code information added.
- WARNING note added to the Safety Notice section noting that each sample tube must have a unique sample ID.
- C-Tick label added to Safety section.
- Caution regarding when the Generic/IDC and DxI Connection Modules are in **PAUSE**, the air system is still active.
- Updated table 3.1 Module Function Codes.

Safety Notice

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate instrument. Do not attempt to perform any procedure before carefully reading all instructions. Always follow product labeling and manufacturer's recommendations. If in doubt as to how to proceed in any situation, contact your Beckman Coulter Representative.

Alerts for Warning, Caution, Important, and Note

⚠ WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could cause death or serious injury. Warning can indicate the possibility of erroneous data that could cause an incorrect diagnosis.

⚠ CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, can cause minor or moderate injury. Caution can also alert against unsafe practices, or indicate the possibility of erroneous data that could cause an incorrect diagnosis.

IMPORTANT Important indicates important information to follow.

NOTE Note indicates notable information to follow.

TIP Tip indicates information to consider.

General Warnings and Cautions

⚠ WARNING

Do not use the equipment in a manner not specified by Beckman Coulter, Inc., as the protection provided by the equipment can be impaired.

⚠ WARNING

Each sample tube processed by the system must have a unique sample ID and readable bar code label. The system sends sample tubes with duplicate sample IDs to the Error Lane. Damaged or unreadable bar code labels cause errors.

If you load multiple sample tubes with the same sample ID on the automation system and on a connected analyzer at the same time, the system can send duplicate results to the LIS. Contact your Beckman Coulter Representative for suggestions to implement unique sample ID labeling.

⚠ CAUTION

To reduce risk of personal injury, operate the system only with all covers in place.

⚠ CAUTION

Do not load or view the Instructions for Use PDF files onto any computer connected to the automation system. Failure to follow this caution can reduce computer processing speed and system performance.

⚠ CAUTION

Use only the approved Power Processor parts and supplies as listed in the Power Processor General System Operation IFU, Appendix B. Use only the approved sample tubes as noted in the Power Processor General System Operation IFU, Operational Overview.

Electromagnetic Wave and Noise Precautions

This In Vitro diagnostic (IVD) equipment complies with the emission and immunity requirement described in IEC 61326-2-6.

⚠ CAUTION

This equipment has been designed and tested to CISPR 11 Class A. In a domestic environment, it could cause radio interference, in which case, you might need to take measures to mitigate the interference.

It is advised that before operation of the device, the electromagnetic environment be evaluated. Do not use this device near sources of strong electromagnetic radiation (for example, unshielded intentional RF sources), as they could interfere with the correct operation.

Hardware Labels

Biohazard Label

This label indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard.

Pneumatic Label

This label indicates a caution that the Inlet module works under a pressure of 0.7 mpa (100 PSI).

Compliance and Certification Markings

These labels and materials declaration table (the Table of Hazardous Substance's Name and Concentration) meet People's Republic of China Electronic Industry Standard SJ/ T11364-2006 "Marking for Control of Pollution Caused by Electronic Information Products" requirements.

Recycling Label

This label is required in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union. The presence of this label indicates that:

1. the device was put on the European Market after August 13, 2005 and
2. the device is not to be disposed of via the municipal waste collection system of any member state of the European Union

Customers must understand and follow all laws regarding the correct decontamination and safe disposal of electrical equipment. For Beckman Coulter products bearing this label, contact your dealer or local Beckman Coulter office for details on the take-back program that facilitates the correct collection, treatment, recovery, recycling and safe disposal of these products.

For the Japan Market:

This system is considered an industrial waste, subject to special controls for infectious waste. Prior to disposal of the system, refer to the "Waste Disposal and Public Cleaning Law" for compliance procedures.

cNRTLus Certification Mark

This symbol indicates recognition by a Nationally Recognized Testing Laboratory (NRTL) that the instrument has met the relevant product safety standards for the United States and Canada.

OSHA, CEC

CE Marking

The CE marking indicates that a product has been assessed before being placed on the market, and has been found to meet the applicable directives relating to the European Union safety, health, and environmental protection requirements.

CE

RoHS Caution Symbol

This symbol indicates that this electronic information product contains certain toxic or hazardous elements, and can be used safely during its environmental protection use period. The number in the middle of the logo indicates the environmental protection use period (in years) for the product. The outer circle indicates that the product can be recycled. The logo also signifies that the product should be recycled immediately after its environmental protection use period has expired. The date on the label indicates the date of manufacture.

These labels and materials declaration table (the Table of Hazardous Substance's Name and Concentration) meet People's Republic of China Electronic Industry Standard SJ/T11364-2006 *Marking for Control of Pollution Caused by Electronic Information Products requirements*.

RCM Symbol

This symbol indicates compliance with the Australian Communications Media Authority (ACMA) requirements (safety and EMC) for Australia and New Zealand.

Symbols Glossary

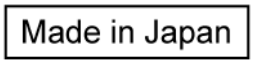
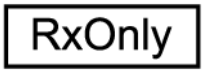
Symbols Glossary

Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	**Title of Symbol: Caution** Meaning of Symbol: Indicates the need for the user to consult the instructions for use for important cautionary information such as warnings and precautions that cannot, for a variety of reasons, the presented on the medical device itself. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.4.4*
	**Title of Symbol: In vitro diagnostic medical device** Meaning of Symbol: Indicates a medical device that is intended to be used as an in vitro diagnostic medical device. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1: Medical devices. Symbols to be used with medical device labels, labelling and information to be supplied. General requirements, clause 5.5.1*
	**Title of Symbol: Dangerous voltage** Meaning of Symbol: To indicate hazards arising from dangerous voltages. *IEC 60417: Graphical symbols for use on equipment - Overview and application, #5036* **Supplemental Product-Specific Manufacturer Information** This symbol can also indicate an area of the system to not access under any circumstances, due to possibility of high voltages and the risk of electrical shock.
	**Title of Symbol: Warning; Biological hazard** Meaning of Symbol: To warn of a biological hazard. Standard Number, Title of Standard, and Symbol Reference Number: *IEC 60878. Graphical Symbols for electrical equipment in medical practices. #7010-W009* **Supplemental Product-Specific Manufacturer Information** This label indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard. This label indicates the use of biohazardous materials in the area. Use caution when working with possible infectious samples. Wear Personal Protective Equipment (PPE) such as gloves, eye shields, and lab coats. Handle and dispose of biohazardous materials according to your laboratory procedures.

Symbols Glossary *(Continued)*

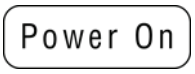
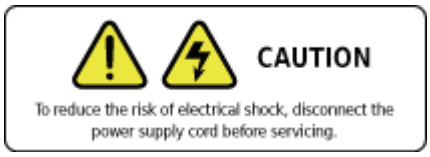
Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	**Title of Symbol: Warning; Crushing of hands** Meaning of Symbol: To warn of a closing motion of mechanical parts of equipment Standard Number, Title of Standard, and Symbol Reference Number: *ISO 7010. Graphical Symbols for electrical equipment in medical practices*. #W024 **Supplemental Product-Specific Manufacturer Information** Use caution to avoid injury to hands when close to equipment with moving mechanical parts.
	**Title of Symbol: Consult instructions for use** Meaning of Symbol: Indicates the need for the user to consult the instructions for use. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.4.3*
	**Title of Symbol: Date of Manufacture** Meaning of Symbol: To indicate the date when the medical device was manufactured. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.3*
	**Title of Symbol: Authorised representative in the European Community** Meaning of Symbol: Indicates the authorized representative in the European community. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.2*
	**Title of Symbol: Manufacturer** Meaning of Symbol: Indicates the medical device manufacturer as defined in EU Directives 90/385/ EEC, 93/42/EEC and 98/79/EC. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.1* **Supplemental Product-Specific Manufacturer Information** This symbol identifies who the legal manufacturer of the product is.

Symbols Glossary *(Continued)*

Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	**Title of Symbol: Catalogue Number** Meaning of Symbol: Indicates the manufacturer's catalogue number so that the medical device can be identified. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.4*
	**Title of Symbol: Serial number** Meaning of Symbol: Indicates the manufacturer's serial number so that a specific medical device can be identified. Standard Number, Title of Standard, and Symbol Reference Number: *ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.7*
	**Title of Symbol: Stop** Meaning of Symbol: To identify the control or the indicator to stop the active function. Standard Number, Title of Standard, and Symbol Reference Number: *IEC 60417: Graphical symbols for use on equipment - Overview and application, #5110A* **Supplemental Product-Specific Manufacturer Information** This symbol indicates a stop button.
	**Title of Symbol: Cooling Unit** Meaning of Symbol: Denotes the cooling unit.
	**Title of Symbol: Driver Box** Meaning of Symbol: Denotes the driver box.
	**Title of Symbol: Made in Japan** Meaning of Symbol: Indicates the country where the device hardware was manufactured.
	**Title of Symbol: RxOnly Symbol** Meaning of Symbol: Caution: U.S. Federal Law restricts this device to sale by or on the order of a licensed practitioner.
	**Title of Symbol: California Proposition 65** Meaning of Symbol: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to https://www.P65Warnings.ca.gov.

Historical Power Processor systems may contain the following additional labels.

Legacy Hardware Labels

Symbol	Description
	**Please Hold This Portion** This symbol, located on the drawer in the Dynamic Inlet and Outlet modules and the top cover of the centrifuge, indicates the most stable position to hold the drawer or cover.
	**Stop Button** This symbol indicates a stop button that you can use to halt any hazardous condition.
	**Power On** This symbol indicates the location of the Power On button in the Centrifuge module.
	**RoHS Environmental** This symbol indicates that the product does not contain any toxic or hazardous substances or elements. The "e" stands for electrical, electronic, and environmental electronic information products. This logo indicates that this electronic information product does not contain any toxic or hazardous substances or elements, and is green and is environmental. The outer circle indicates that the product can be recycled. The logo also signifies that the product can be recycled after being discarded, and should not be casually discarded.
	**C-Tick Mark** The C-Tick mark is intended for use on products that comply with the applicable Electromagnetic Compatibility (EMC) standards in the Australian or New Zealand market.
	**Caution** To reduce the risk of electrical shock, disconnect the power supply cord before servicing.
	**Caution, Biohazard Label** This caution symbol indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard.
	**Sharp Object Label** A label reading “CAUTION SHARP OBJECTS” is found on the Decapper device in the Decapper/Serum Level Detection (SLD) module.

Legacy Hardware Labels *(Continued)*

Symbol	Description
	**Caution, Moving Parts** This caution symbol warns the operator of moving parts that can pinch or crush. This label is found in several locations.
	**Moving Parts Label** This label indicates moving parts that can pinch or crush. This label is found in several locations. Caution parts move automatically While the system is in operation, do not touch or go close to any moving parts. Close protective guards and covers during operation. Failure to close covers correctly can cause injury or incorrect results.

Contents

General Information

Intended Use

The basic Power Processor is an automated sample handling system which processes sample tubes from the pre-centrifugation, pre-sorting step to presentation of centrifuged and decapped samples into Generic or Personality Racks for specific instruments. The Power Processor can be configured with optional software and hardware to allow processing of sample tubes on Generic Connection Instruments.

The Power Processor performs all pre-analytical sample tube preparation, and then sorts the sample tubes directly to Generic Connection Modules where the samples are pipetted by the Generic Connection instrument for testing. After the samples are pipetted, the tubes can route to other instruments for additional testing or to Outlet Racks.

Scope of this Manual

This *Instructions For Use* manual is for Power Processor Generic/IDC and DxI Connection Modules used with PrepLink software Version 5.0. This manual contains information and instructions that will assist you in performing Power Processor Generic/IDC and DxI Connection Module operations and troubleshooting functions.

NOTE Be sure to follow all safety cautions and warnings noted in this document.

This document is part of the Power Processor Instructions for Use *Document Set* and, only covers the Power Processor Generic/IDC and DxI Connection Modules. For information and instructions for other Power Processor modules, refer to the appropriate Power Processor manual from the list below.

Power Processor Instructions for Use Document Set

- *General System Operation IFU,* PN B01683
- *Inlets, Outlets, Hematology, and Barcode Verification Modules IFU*, PN B01519
- *Centrifuge Module IFU*, PN A97119
- *Decapper and Recapper Modules IFU*, PN A97252
- *Aliquot Module IFU*, PN A97103
- *LX and DxC Connection Modules IFU*, PN A97111
- *AU Connection Modules IFU*, PN B01540
- *Generic/IDC and DxI Connection Modules IFU*, PN A97260
- *Stockyard Modules IFU*, PN A97244

Document Conventions

Safety Information

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate instrument. Do not attempt to perform any procedure before carefully reading all instructions. Always follow product labeling and manufacturer's recommendations. If in doubt as to how to proceed in any situation, contact your Beckman Coulter Representative.

For more information, refer to the Safety Notice section, in this document.

Alerts for Warning, Caution, Important, and Note

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. May be used to indicate the possibility of erroneous data that could result in an incorrect diagnosis (does not apply to all products).

⚠ CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. May be used to indicate the possibility of erroneous data that could result in an incorrect diagnosis (does not apply to all products).

IMPORTANT IMPORTANT is used for comments that add value to the step or procedure being performed. Following the advice in the IMPORTANT notice adds benefit to the performance of a piece of equipment or to a process.

NOTE NOTE is used to call attention to notable information that should be followed during installation, use, or servicing of this equipment.

Trademarks and Product Names

Associated registered trademark and trademark symbols will only be used in the first instance where they apply.

The product family names, Synchron and UniCel, will only appear associated with members of products in those families the first time the product name is mentioned. Thereafter the product name will be used alone. One exception to this rule is the use of names of instrument racks, since the name of the rack includes the product family and is associated with a specific Beckman Coulter part number.

CHAPTER 1

Module Description

This chapter provides a brief description of the Power Processor Generic/IDC and DxI Connection Modules.

Generic (CLSI) Connection Modules

Power Processor can be configured with optional software and hardware to allow processing of sample tubes on Generic Connection Instruments (non-LX/DxC and IDC). The Power Processor performs all pre-analytical sample tube preparation, then sorts the sample tubes directly to Generic Connection Modules where the samples are pipetted by the Generic Connection instrument for testing. After the samples are pipetted, the tubes can route to other instruments for additional testing or to Outlet Racks.

IMPORTANT This chapter contains information specific only to the optional Generic Connection hardware and related software functions. Refer to Chapters 1 through 3 in the *General System Operation IFU* for information about standard Power Processor hardware and features.

Multiple Generic Connections

At installation, the Beckman Coulter Service Representative configures the Power Processor for up to 12 Generic Connection Modules.

⚠ CAUTION

Do not operate the system without the Generic Connection LAS sample pipette cover located on the back of the instrument in place. Make sure that the PAUSE button on the Generic Connection Module is lighted before lifting the instrument pipette cover.

⚠ CAUTION

Even when the Generic Connection Module is in PAUSE mode, the air system is still active and applying a constant air pressure to the sample pipette arm. This may cause unexpected movement of the sample pipette arm when resolving a jammed object error creating a possible moving part or pinch hazard. Use caution when resolving jammed object errors at the LAS sample pipette.

Generic Connection Modules Description

Power Processor with Generic Connections

The Power Processor with Generic Connections allows the operator to assign tests and route sample tubes to Generic Connection Modules (non-LX/DxC and IDC). The Power Processor performs all pre-analytical sample tube preparation and automatically routes sample tubes to Generic Connection instruments or instrument Clusters. Once samples are pipetted for analysis by the Generic Connection instrument, the system can route sample tubes for testing on other instruments or to Outlet Racks. Primary sample tube and aliquot tube routing and sorting decisions are based on parameters set by the operator.

Key Features

The optional hardware and software add the following features to the Power Processor:

- Automatic loading of tubes to Generic Connection Modules.
- Clustering (grouping) of Generic Connection instruments for enhanced tube routing and testing.
- Routing of the tubes to the Pending Rack for Rerun/Add-on testing determined by operator.
- Tube routing for Primary and aliquot tubes.
- Ability to pause each Generic Connection Module.

Hardware

Hardware required to connect Generic Connections to the system includes:

- Generic Connection Module
- Generic Connection Instruments (for example, DxI, Centaur, AU2700/5400)

As sample tubes route on the system, they move through the Generic Connection Module. At the T-Lane intersection of the main track and Generic Connection Module, the sample tubes are read by a bar code reader. Once the sample IDs are scanned, the sample tubes either route to the Generic Connection Module for testing by the Generic Connection instrument or pass the Generic Connection Module to continue routing on the system.

For sample tubes that route to the Generic Connection Module, another bar code reader scans the sample ID and sends the Sample ID to the connected instrument. The instrument queries the LIS for programming, if needed. When the instrument is ready to process the sample, the tube is released to the aspiration point, and the instrument aspirates the sample from the tube on the track. Then the sample tubes route to the main track again for processing on other instruments or routing to the Stockyard/Outlet Racks.

Additional Hardware Information

When a system is configured with a Generic (CLSI) Connection Module before an LX or DxC Connection Module, the H-lane can have a keypad. The H-lane with a keypad uses the error codes and sensor diagram located in CHAPTER 4, *Troubleshooting*.

NOTE Clinical and Laboratory Standards Institute is referred to as CLSI in this manual.

Centaur Generic Connection Module

When a Bayer Advia® Centaur™ instrument is connected to the Power Processor system, it is configured as a Generic Connection Module.

Information regarding setup, operation, maintenance and troubleshooting the Centaur Generic Connection can be found in this document. For information regarding the Centaur instrument, refer to the manufacturer's manuals or contact the manufacturer's representative.

Software

The PrepLink and Line Control Computer show changes to some screens when they are configured for Generic Connection Modules.

PrepLink

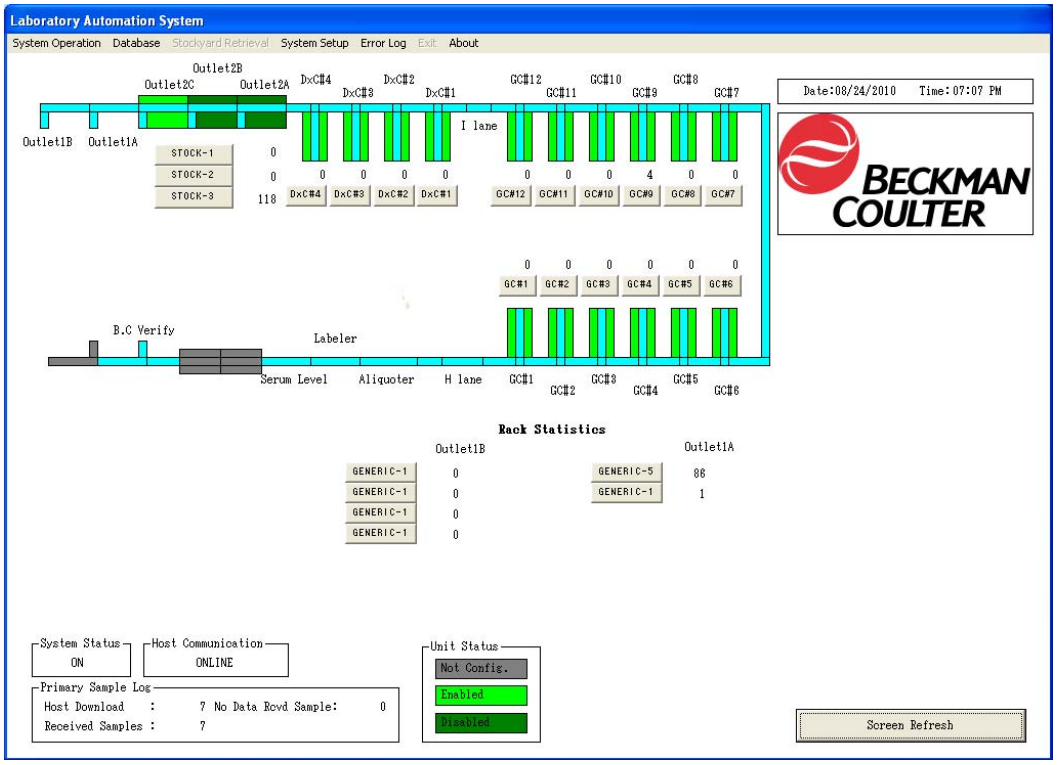
The following PrepLink screens contain changes or added features when the Power Processor is configured for Generic Connections:

- Locations
- Rack Assignment
- Test Configuration
- Instrument Loading
- Aliquot Screen
- GC Cluster Screen

Line Control Computer

When the Line Control Computer is configured to manage the Power Processor with Generic Connections, the Main screen shows a default graphical representation of the automation line, including all additional hardware modules connected to the system. This default Main screen display cannot be the same as the module placement of the system in your laboratory. The default representation always shows four instruments before the twelve Generic Connection instruments. Outlet 1A always shows after Outlet 2A, 2B, and/or 2C (Stockyard). Connected instruments not configured for the system will show as gray on the Main screen. All other information shown on the Main screen is correct, such as number of sample tubes sorted to Outlets, racks or the Generic Connection instruments. Refer to Figure 1.1.

Figure 1.1 Line Control Computer Showing Power Processor Track Diagram with instruments and Generic Connections



Tube Routing

When the Power Processor is configured with Generic Connections, the PrepLink makes sample tube routing decisions using the following information:

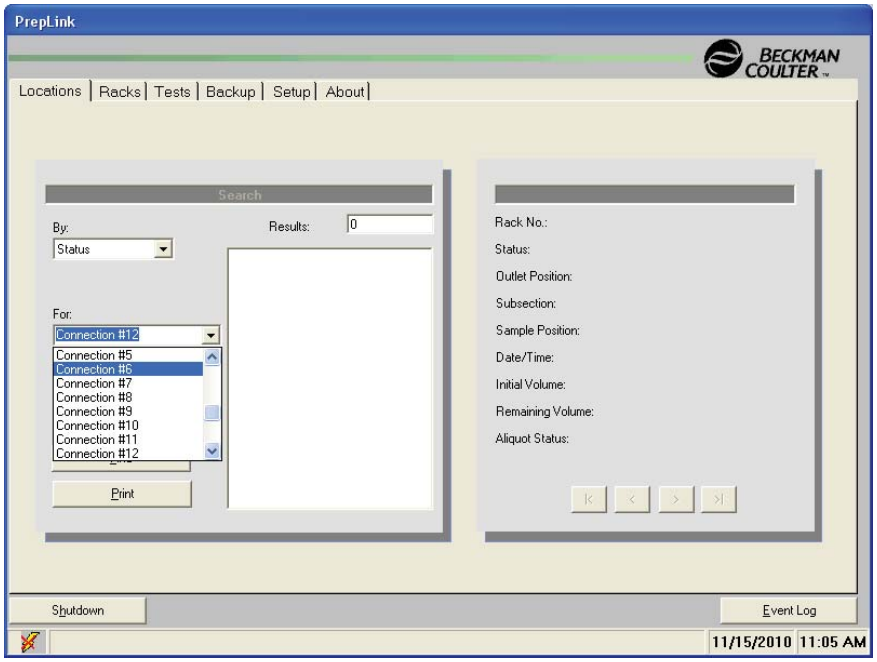
- Sample programming
- Availability of Generic Connection instruments
- Configuration parameters set by the operator which include tests assigned to Generic Connection instrument(s) or Cluster(s) created for systems configured with an Aliquot Module

Once a sample tube is routed to the Generic Connection Module, PrepLink considers tests programmed for the sample tube that is assigned to the Generic Connection as complete and routes the sample tube for additional testing or to the Stockyard.

Sample Location with Generic Connections

When the operator searches for samples by Status on the **Locations** tab, Generic Connections are shown when you select  in the **For** text box. The Generic Connections are numbered from #1–#12 dependent on the number connected to the system. Refer to Figure 1.2. To search for samples by Sample ID, or Status on a Generic Connection, refer to the procedure "How to Search for Samples" in CHAPTER 3 of the *General System Operation IFU*.

Figure 1.2 Locations Tab Showing List of Generic Connections



Instrument Dynamic (CLSI) Connection Modules

Clinical and Laboratory Standards Institute is referred to as CLSI in this manual.

The Power Processor V3.5 or later can be configured with optional software and hardware to allow processing of centrifuged and decapped sample tubes to Dynamic Connection Instruments (with CLSI connections, such as the DxI). Generic instruments with dynamic connections to the system are referred to as IDC instruments. This section contains information specific to the hardware and related software functions of the Power Processor with DxI as an Instrument Dynamic Connection (IDC).

The IDC connection to PrepLink:

- Tracks sample status,
- Monitors chemistry reagents,
- Makes optimal decisions based upon the tests requested,
- Makes optimal decisions based upon tests available,
- Makes optimal decisions based upon instruments available.

In this chapter, IDC instruments are referred to as "instruments." DxI will be used as an example of an IDC instrument throughout this chapter.

IMPORTANT This section only provides procedures and information that directly relate to the operation of the Power Processor with DxI connection hardware and software. For detailed information about the DxI system, refer to the UniCel DxI *Instructions For Use*.

Multiple IDC and Generic Connections

At installation, the Beckman Coulter Service Representative configures the Power Processor for up to 12 CLSI connected IDC and/or Generic Connection instruments.

⚠ CAUTION

Do not operate the system without the Generic Connection LAS sample pipette cover located on the back of the instrument in place. Make sure that the PAUSE button on the Generic Connection Module is lighted before lifting the instrument pipette cover.

⚠ CAUTION

Even when the Generic Connection Module is in PAUSE mode, the air system is still active and applying a constant air pressure to the sample pipette arm. This may cause unexpected movement of the sample pipette arm when resolving a jammed object error creating a possible moving part or pinch hazard. Use caution when resolving jammed object errors at the LAS sample pipette.

Instrument Dynamic Connection Modules Description

Power Processor with IDC Connections

The Power Processor with IDC connections performs all pre-analytical sample tube preparation steps, then aspirates the sample from the sample tubes to connected IDC instruments for testing. The system routes sample tubes that have been analyzed by the IDC instruments, and sample tubes that require testing on other instruments, to specific racks in the Outlet Modules for storage or additional testing.

Key Features

The IDC uses Generic Connection hardware and adds the following software features:

- Automatic routing of sample tubes to connected IDC instruments
- Retrieval of sample tubes for rerun, reflex and add-on tests
- Tube sorting to connected IDC instruments based on reagent and calibration status, sample programming and instrument mode
- Searchable and printable rack maps of the Stockyard, Storage and the Pending Racks
- Tube routing to the Pending Subsection for Rerun/Add-on testing
- Tube routing for primary and aliquot tubes
- Ability to pause each IDC Module

Hardware

Hardware required to connect instruments with dynamic connections to the system include:

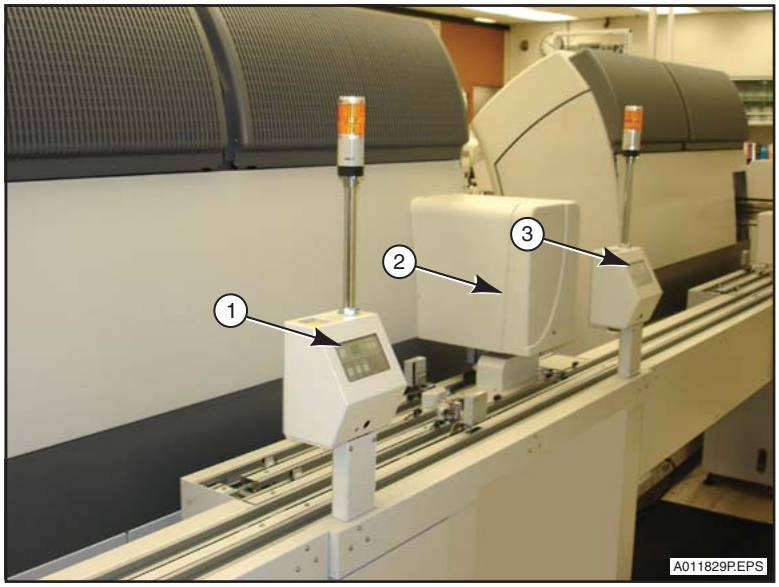
- Generic Connection Module. Refer to Figure 1.4.
- Non-LX/DxC instruments that can communicate directly with the Generic Connection Module using CLSI, such as a DxI. Refer to Figure 1.3.

As sample tubes route on the system, they move through the Generic Connection Module. At the intersection of the main track and Generic Connection Module, the sample tubes are read by a bar code reader. Once the sample IDs are scanned, the sample tubes either route to the Generic Connection Module for testing by the instrument, or the sample tubes are released to continue routing on the system. For sample tubes that route to the Generic Connection Module, another bar code reader scans the sample ID for programming information and the instrument pipettes the sample from the tubes for testing. The sample tubes route to the main track again for processing on other instruments or routing to stockyard or Outlet Racks.

Figure 1.3 DxI Instrument

Additional Hardware Information

Figure 1.4 Generic (CLSI) Connection Module with a DxI Instrument



1. Track Keypad
2. Generic Connection LAS sample pipette cover
3. Generic Connection Module Keypad

Printer

The Power Processor can be configured with an optional printer to enable the printing of setup parameters and rack maps of the Stockyard, Storage and the Pending Rack.

H-Lane Module

The H-Lane enables sample tubes to be routed from the Return Lane back to the Through Lane so sample tubes that have been routed to the Stockyard can be re-routed to connected IDC instruments.

When a system is configured with a Generic (CLSI) Connection Module before an LX or DxC Connection Module, the H-lane may have a keypad. The H-lane with a keypad uses the error codes and sensor diagrams located in CHAPTER 4. See Table 4.6, L and H-Lane Error Codes on page 4-17 and sensor diagram Figure 4.8, L and H Lane on page 4-19.

Software

The PrepLink and Line Control Computer have slightly different screens when they are configured to manage the Power Processor with and without instrument connections.

Tube Routing

Routing decisions are made by the PrepLink, and are based on the following:

- Sample programming
- Availability of connected instruments
- Configuration parameters set by the operator

The distribution of samples between connected instruments can be affected by reagent status and workload.

IMPORTANT For systems with IDC instrument connections, the acronym in PrepLink for a test must match the acronym shown at the DxI or IDC for that test.

PrepLink

When PrepLink is configured to manage the Power Processor with instrument connections, the Setup screen has additional selections to enable the operator to view the Instrument Protocol (IP) Address, set the system Rerun mode and pause the loading of sample tubes at the Connection Module. In addition, the following PrepLink screens contain changes or added features for Generic Connections:

- Locations
- Rack Assignment
- Test Configuration
- Instrument Loading
- Aliquot Screen

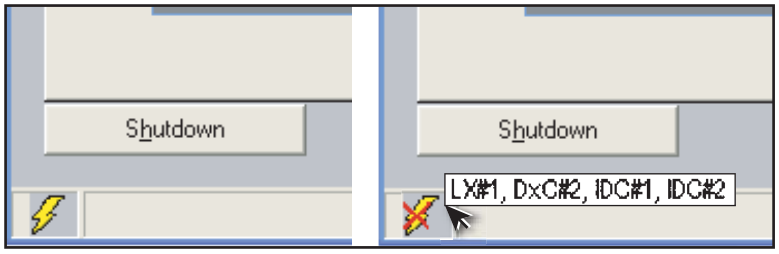
In addition, when instrument connections are configured, a lightning bolt appears at the bottom of the PrepLink screen on the left side. Refer to Figure 1.5.

The condition of the lightning bolt shows the status of the PrepLink communication with the instrument connections. The following table explains the communication statuses.

Table 1.1 PrepLink Communication with Instrument Connections

If the icon at the bottom left is a...	Then...
Lightning bolt.	PrepLink is configured for instrument connections and is communicating.
Red X on a lightning bolt.	PrepLink is configured for instrument connections but is not communicating with the connections. Instruments not communicating with PrepLink are listed in a box when the cursor is moved over the lightning bolt with the red X. Refer to Figure 1.5.

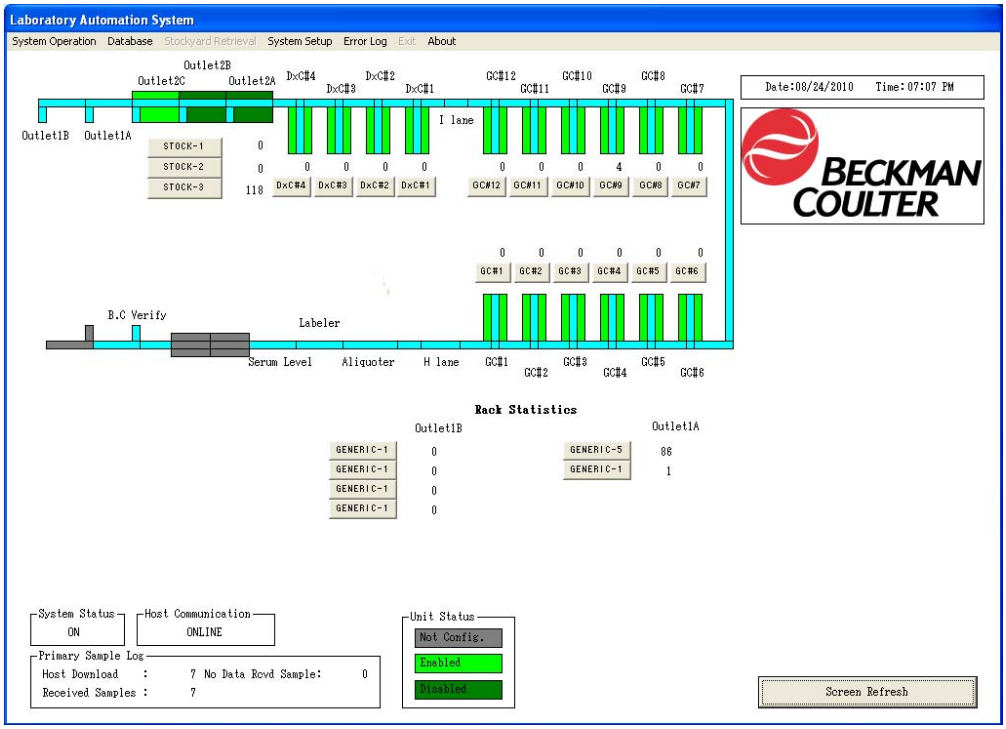
Figure 1.5 PrepLink Screens Showing Instruments Communicating and Not Communicating with PrepLink



Line Control Computer

When the Line Control Computer is configured to manage the Power Processor with instrument connections, the Main screen shows a default graphical representation of the automation line, including all additional hardware modules connected to the system. This default Main screen display can be different from the module placement of the system in your laboratory. The default representation always shows four LX and/or DxC instruments before the twelve Generic Connection and/or IDC instruments (an IDC is a type of Generic Connection). Outlet 1A always appears after Outlet 2A and/or 2B and 2C (Stockyard). Gray areas on the screen represent positions where modules are not configured. All other information shown on the Main screen is correct, such as number of sample tubes sorted to Outlet racks or the instruments.

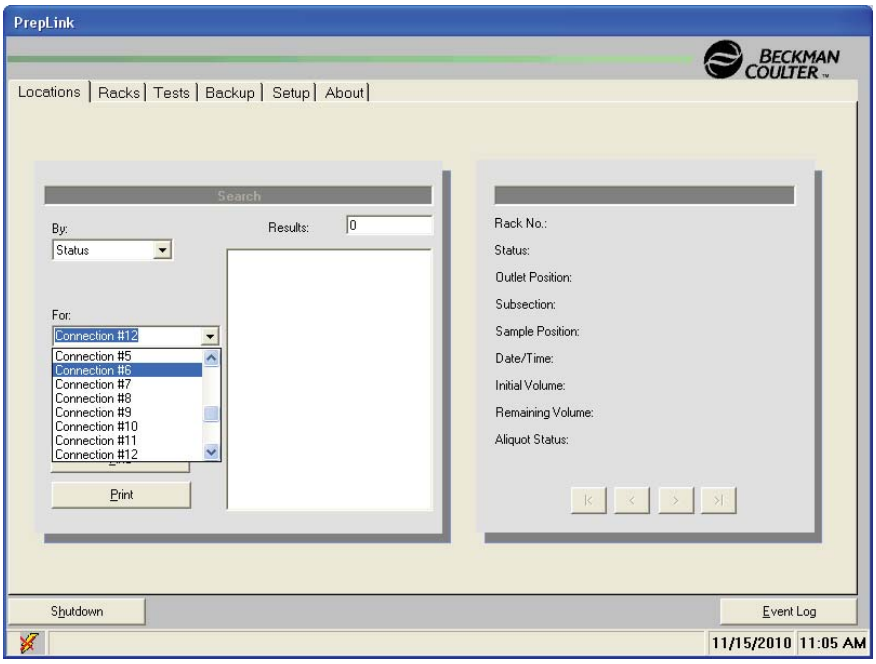
Figure 1.6 Line Control Computer Main Screen



Sample Location with IDC and Generic Connections

When the operator searches for samples by Status on the **Locations** tab, IDC and Generic Connections are listed when you select  in the **For** text box. The IDC and Generic Connections are listed as "Connections" and numbered from 1-12 depending upon the number connected to the system. Refer to Figure 1.7. To search for samples by Sample ID or Status on a Generic Connection, refer to the procedure “How to Search for Samples” in CHAPTER 3 of the *General System Operation IFU*.

Figure 1.7 Locations Tab Showing Sample Status for an IDC Connection



CHAPTER 2

Module Procedures

This chapter contains operational procedures for the Generic/IDC and DxI Connection Modules.

Generic Connection Module Procedures

Rack Assignment

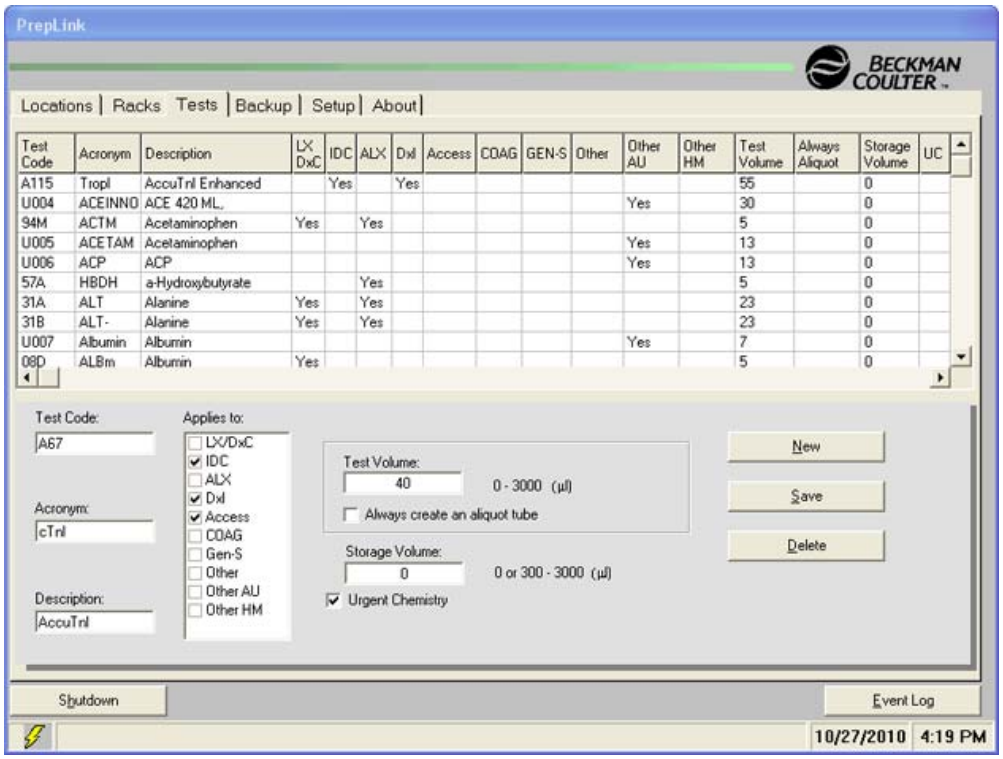
To assign racks to locations within the Outlet or Hematology Module, refer to the "Rack Assignment" procedure in CHAPTER 2, of the *General System Operation IFU*.

Test Configuration

When a system is configured for Generic Connections, "Other" shows as an instrument option in the **Applies To** List box in the **Tests** tab. If the operator checks "Other" ☑ to assign a test to Generic Connections, the operator must remove the checks from the instrument boxes. Refer to Figure 2.1. For additional information on test configuration, refer to the “Test Configuration” section CHAPTER 2, of the *General System Operation IFU*.

Once a test is assigned to "Other," "Yes" will only show in the "Other" column for the test.

Figure 2.1 Test Configuration Screen with Generic Connections Configured



IMPORTANT If the operator intends to route aliquot tubes to the Generic Connected instruments for Rerun/Add-on testing, Test Volumes or Dead Volumes MUST be increased at the Test Configuration screen to provide sufficient sample volume for the additional testing.

How to Configure a Test for Generic Connections

The operator can configure the appropriate test to run on a Generic Connection. Follow the procedure below. Refer to Figure 2.1.

1 Select **Tests** tab.

2 Double-click on the test. The test row should be highlighted on the screen.

3 In the **Applies To** field, remove the checks from all instrument boxes.

4 Check "Other" ☑ and select **Save**.

The screen updates to show "Yes" in the "Other" column for the test. All previously checked instrument boxes will now show empty boxes and columns for the test.

5 Shutdown and restart PrepLink to apply any changes.

How to Remove a Test from Generic Connections

The operator can change a test configuration to remove it from the Generic Connection and assign it to one or more instruments by following the procedure below. Refer to Figure 2.1.

1 Select **Tests** tab.

2 Double-click on the test. The test row should be highlighted on the screen.

3 In the **Applies To** field, remove the check from the "Other" box.

4 Assign the test to one or more instruments by checking appropriate boxes and select **Save**.

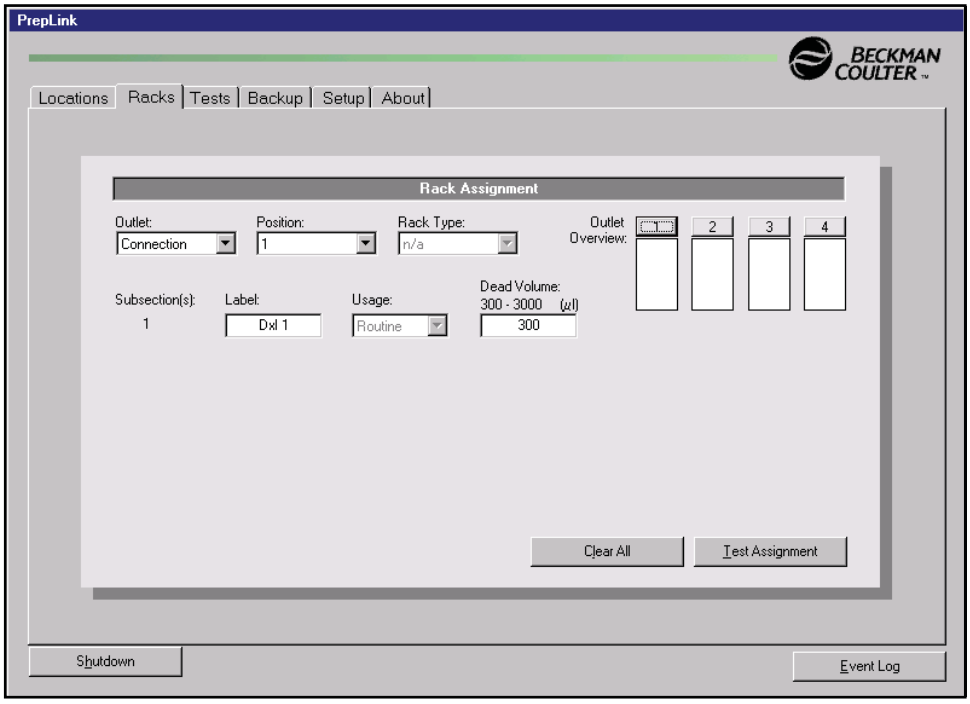
The screen updates to show "Yes" in the selected instrument column(s) for the test. The "Other" column for the test is now empty.

5 Shutdown and restart PrepLink apply any changes.

Test Assignment for Generic Connection Instruments

Generic Connections show as the option "Connection" in the **Outlet** field. The Position number and the number of **Outlet Overview** columns will be the same as the number of configured Generic Connection instruments. Once "Connection" is selected, the Position number and **Outlet Overview** number selected must match. For example, Position 2 and **Outlet Overview** column 2 are selected to assign tests to Generic Connection instrument #2. Also, a dead volume must be typed in if the system is configured with an Aliquot Module. Additionally, to give a label to the Generic Connection instrument, type in a name or number (maximum 10 alphanumeric characters) in the **Label** field.

Figure 2.2 Rack Assignment Screen with Generic Connection.



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After the Position and Outlet options are selected for the Generic Connection instrument (and the Dead Volume is entered), the operator selects the Test Assignment button to assign tests to the Generic Connection instrument. The Test Assignment box appears and the operator can select the appropriate tests.

Generic Connection Test Assignment

1 From the **Racks** tab, select Connection from the **Outlet** .

2 Select Position and Outlet Overview numbers to match. For example, Outlet Connection (#2), Position 2, Outlet Overview column 2.

3 Select the **Test Assignment** button. The Test Assignment dialog box opens.

4 Select the "Other" at the bottom of the dialog box.

IMPORTANT Tests assigned to IDC or Other AU must not also be assigned to “Other.”

5 Select tests in the Available box by clicking on each test while holding the Control key down.

6 Select the **Select** button to add tests to the Selected box. Individual tests can be selected by double-clicking on the tests.

7 If necessary, remove tests from the selected box using the **Remove** button or by double-clicking on the unwanted tests.

8 When the test assignment is complete, select the **OK** button to return to the Rack Assignment screen.

9 Shutdown and restart PrepLink to apply any changes.

Setting the Rerun Mode

When the PrepLink is configured for connected instruments, Rerun can be set to Automatic or Manual Rerun mode. When set to Automatic Rerun mode, sample tubes requiring rerun or add-on sample programming are retrieved from the Stockyard and route to connected instruments. When set to Manual Rerun mode, sample tubes that require Rerun or Add-on sample programming are retrieval from the Stockyard and routed to the Pending Rack.

Samples can be retrieved from the Stockyard if the test(s) for rerun or add-on testing are requested at the LIS or Data Manager.

IMPORTANT If the operator intends to route aliquot tubes to the Generic Connected instruments for Rerun/Add-on testing, Test Volumes or Dead Volumes MUST be increased at the Test Configuration screen to provide sufficient sample volume for the additional testing.

Rerun Mode with Dilutions

⚠ CAUTION

When PrepLink is set for Automatic or Manual Rerun and a dilution is required for the sample, the operator must intervene so the original tube is not routed to the connected instrument. This could result in a wrong answer if a dilution factor is applied.

To prevent the original tube that requires a dilution from routing to the connected instrument, use the PrepLink Retrieve feature to route the sample tube to the Pending Rack. Once the tube has sorted to the Pending Rack, the rerun can be ordered with a dilution factor at either Data Manager or at the connected instrument.

Route Rerun/Add-on to Pending Rack

When PrepLink is configured for Generic Connections and set for system Automatic Rerun, the operator has an additional option to select individual tests for rerun or add-on sample programming to route to the Pending Rack. When the test is selected in the Test Configuration

screen, a check box "Route Rerun/Add-on to Pending Rack" is shown. The screen updates to show a "Rerun to Pending" column at the right side of the table. The test selected to route to the Pending Rack shows a "Yes" in the "Rerun to Pending" column. Refer to Figure 2.1. This routing takes priority over routing for other tests.

How to Enable/Disable the Route Rerun/Add-on to Pending Rack

1 Select **Tests** tab.

2 Double-click on the test. The test row will be highlighted on the screen.

3 To **enable** the feature:

- Select ☑ "Route Rerun/Add-on to Pending Rack."
- Select **Save**.

  The screen will update and "Yes" will display in the "Rerun to Pending" column for the test.

To **disable** the feature:

- Deselect ☐ "Route Rerun/Add-on to Pending Rack."
- Select **Save**.

  The screen will update and the "Rerun to Pending" column will be empty for the test.

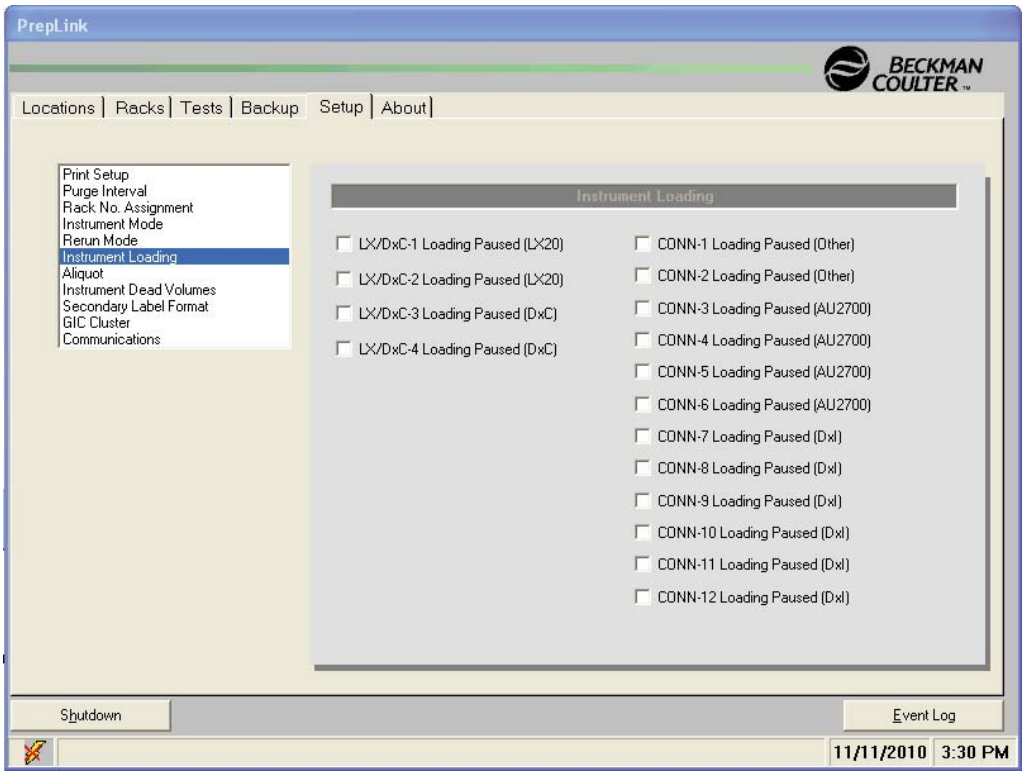
4 Shutdown and restart PrepLink to apply any changes.

Pausing the Generic Connection Module

Configured Generic Connections are shown on the Instrument Loading screen of the **Setup** tab. Refer to Figure 2.3. The operator can select to pause one or more of the Generic Connection Modules by checking the box in front of the **Generic Connection**. Note that both Generic Connections and IDC Connections are listed on the right side.

Once the generic connection is paused, sample tubes queued in the Connection Module will process and return to the main track. However, additional sample tubes will NOT route to the paused Generic Connection. Instead, the sample tubes can route to other available instruments for testing. If no tests can be run on other connected instruments, the sample tubes route to the stockyard for time out. If the paused Generic Connection becomes available before time out is complete, the sample tube routes to the Generic Connection. If time out completes before the paused Generic Connection is available, the sample tube routes to the Pending Rack.

Figure 2.3 PrepLink Setup Tab Showing the Instrument Loading Screen with Generic Connections



How to Pause the Generic Connection Module

1 Select the PrepLink **Setup** tab.

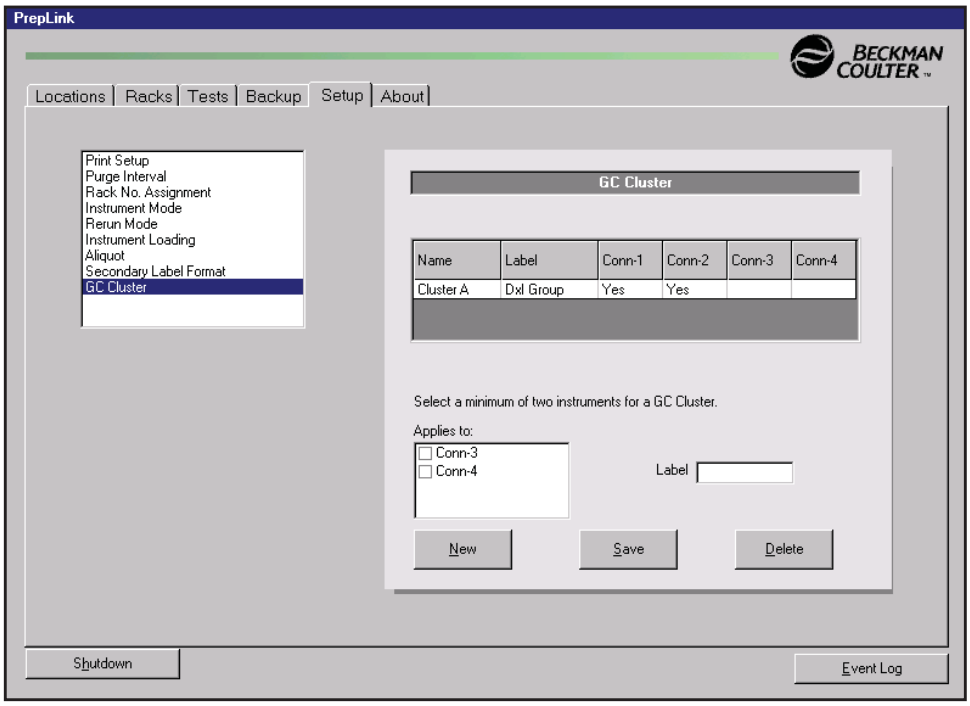
2 Select **Instrument Loading** from the list on the left side of the screen. An Instrument Loading dialog box appears on the right side of the Setup screen.

3 To pause a Module, from the Instrument Loading dialog box, select the check box next to the appropriate Generic Connection Module. Sample tubes will not be routed to the Generic Connection Module until Generic Connection Loading Pause is disabled.

Clustering Generic Connections

For systems configured with aliquot modules, two, three or four Generic Connection instruments can be grouped into a Cluster to make sample tube sorting more efficient and minimize the number of aliquot tubes made. Clustering makes multiple Generic Connection instruments appear as one instrument. Refer to Figure 2.4. A maximum of six clusters can be programmed when a system is configured with twelve Generic Connection instruments; a minimum of two Generic Connection instruments are assigned to each cluster. The first cluster assigned will show as Cluster A; and the second cluster will show as Cluster B. Sample tubes programmed with tests assigned to a Generic Connection Cluster route to the first available instrument in the Cluster.

Figure 2.4 PrepLink Setup Tab Showing the Generic Connection Cluster Screen and Generic Connection Instruments Assigned to a Cluster



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How to Assign a Generic Connection Cluster

1 From the **Setup** tab, select **GC Cluster** from the list on the left side of the page. Refer to Figure 2.4.
The Cluster screen appears showing the configured Generic Connections in the **Applies To** field.

2 Select the **New** button.

3 Select two or more ☑ to Cluster in the **Applies To** field.

4 Assign an alphanumeric Label to the Cluster. The Label must not exceed 8 characters. Type the name into the **Label** field.

5 Select **Save**. The Cluster will show in the top field showing the Cluster Name, Label and Clustered Generic Connections.

6 Shutdown and restart PrepLink to apply any changes.

How to Delete a Generic Connection Cluster

1 From the **Setup** tab, select **GC Cluster** from the list on the left side of the page. Refer to Figure 2.4.
The GC Cluster screen appears showing the Clusters in the field at the top of the screen.

2 Select the Cluster to delete. The Cluster row should be highlighted.

3 Select **Delete**.

4 A Delete dialog box opens. Select **Yes** to delete the highlighted Cluster.

5 Select **Save**. The screen updates and the deleted Cluster is not shown in the top field.

6 Shutdown and restart PrepLink to apply any changes.

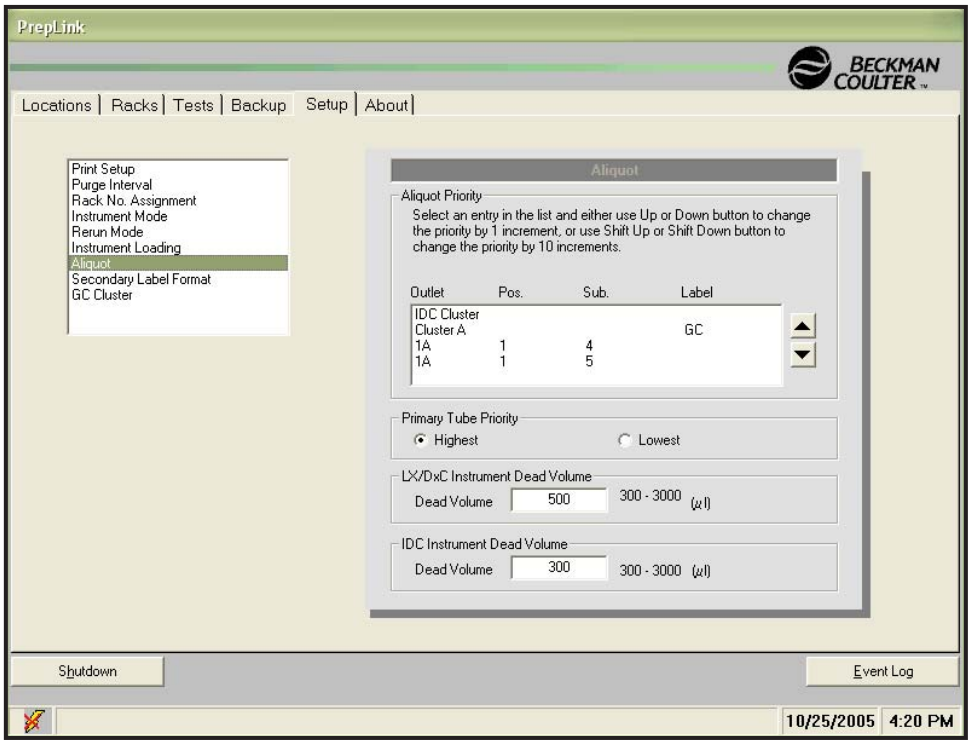
Aliquot Priority

When Generic Connections and Clusters are configured with an Aliquot Module, they show in the **Aliquot Priority** field. Refer to Figure 2.5. The Aliquot Priority defaults in the following order with the highest priority starting at the top:

- IDC Cluster (all IDCs as a group)
- Generic Connection Clusters
- Generic Connection
- Rack

The operator can assign a different aliquot priority by following the "How to Configure the Aliquot Tube Priority" procedure in the *Aliquot Module IFU*. The Aliquot Priority screen will update to show the new priority assignments selected by the operator.

Figure 2.5 PrepLink Setup Tab with the Aliquot Screen Showing Aliquot Priority



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The Aliquot Priority window may be expanded to display up to a maximum of six clusters depending on the number of configured Generic connections.

Always Create an Aliquot Tube Feature with Generic and IDC Connections

In this section, "LX" refers to LX/DxC and "Generic" refers to non-LX/DxC and IDC connections.

The "Always Create an Aliquot Tube" feature is available for Power Processors configured with Generic Connections and an Aliquot Module. The Primary and aliquot tube routing changes with different instrument configurations, sample programming and PrepLink setup.

When the Always Aliquot feature is selected for tests on systems with LX/DxC and/or Generic or IDC Connections, refer to Table 2.1 for primary and aliquot tube routing. Aliquot tubes are routed to instruments based on sample programming and PrepLink setup. The operator can assign aliquot priorities for routing the aliquot tubes. Refer to the *Aliquot Module IFU* for "How to Configure the Primary Tube Priority" and "Always Create an Aliquot Tube." Once testing is complete, the Primary sample tube and aliquot tube(s) that have been routed to connected instruments route to the Stockyard. Aliquot tubes for non-connected instruments route to an assigned rack if required.

Table 2.1 Always Aliquot Tube Routing for Connected Instruments

Tests Ordered for...	Tube Routing
LX/DxC tests only (no tests are "Always Aliquot")	Primary tube routes to the LX/DxC(s)
LX/DxC tests (no tests are "Always Aliquot") -AND- Generic Connection tests (a minimum of one test is "Always Aliquot")	Primary tube routes to the LX/DxC(s) Aliquot tube(s) route to Generic Connection(s)
Generic Connection tests (a minimum of one test per Generic Connection/Cluster is "Always Aliquot")	Aliquot tube routes to the Generic Connection or Generic Connection Cluster Primary tube routes to the Aliquot Storage Rack
Highest Priority Generic Connection tests (no tests are "Always Aliquot") -AND- Other Generic Connection tests (a minimum of one test is "Always Aliquot")	Primary tube routes to the highest Priority Generic Connection Aliquot tube route to other Generic Connection(s)

Share Primary

The "Share Primary" option allows all connected instruments to share the primary sample tube. The Share Primary option takes precedence over the "Always Create an Aliquot Tube" option for tests that are run on connected instruments. If the Share Primary option is enabled and the "Always Create An Aliquot Tube" option is selected, an aliquot will not be made for tests to run on connected instruments. The Share Primary option is enabled by a Beckman Coulter Representative at installation or when requested by the customer.

Instrument Dynamic (CLSI) Connection Modules Procedures

Sample Type/Material Type Logic

When LX/DxC or DxI instruments and AU instruments are connected to the automation line, if the sample type of the add-on sample programming does not match the sample type of the original sample programming, PrepLink will display the message "Material type mismatch for sample ID n." If the sample programming is received before the sample is placed on the line or while the sample is in the "Received" state, the sample will be deleted from the database. If the sample is in process on the line, the primary will route to the Pending Rack if possible. If the primary has already sorted to an outlet rack, then it will not be possible to route it to the Pending Rack. Check the outlet rack and process the sample off-line if further testing is needed.

Test Assignment Procedure

IMPORTANT Tests assigned to LX/DxC, DxI, or Access racks MUST also be assigned to the corresponding STAT rack subsections if a STAT rack is configure.

IMPORTANT Tests assigned to IDC or Other AU, must not also be assigned to Other.

For information on how to assign tests, refer to the *General System Operation IFU*, Test Assignment Procedure.

Outlet Configuration

The Power Processor with IDC instrument connections requires that two Outlet Modules be installed, although the basic Power Processor can be equipped with either one or two outlets.

Though the procedures for configuring outlet racks for the standard Power Processor and the Power Processor with instrument connections are the same, the instrument connections require specific rack types to be configured. Refer to the procedures, “Rack Configuration for Software Versions 3.0 or Lower,” “Rack Configuration for Software Versions 3.1 and Greater,” and “Rack Assignment” in CHAPTER 2, of the *General System Operation IFU.*

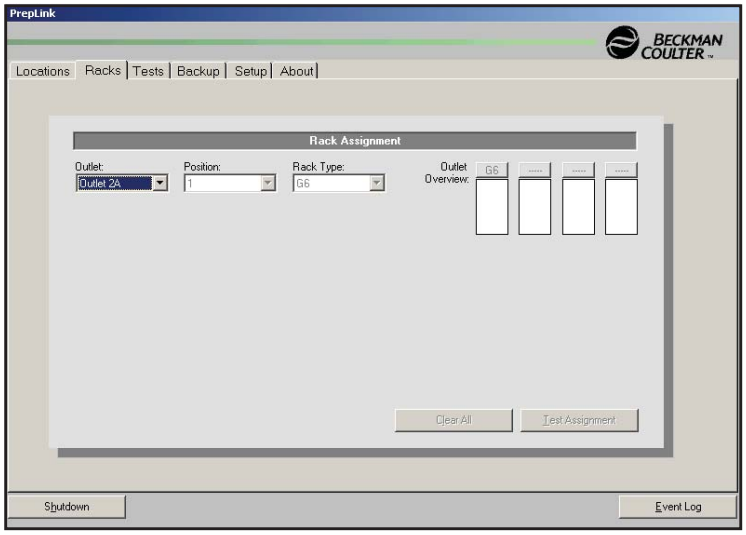
When the Power Processor with instrument connections is installed, PrepLink automatically configures Outlet 2 with one group of four Generic Racks (G6). This outlet is collectively known as the 200-tube Stockyard. The Stockyard is the destination for sample tubes with completed testing or for remapped tubes. The system also routes sample tubes that are waiting to be analyzed on connected instruments to the Stockyard so that they can be retrieved when the instrument is available.

The operator must configure a Pending and/or Error sort location in one of the four rack positions in Outlet 1A before the system will operate.

Stockyard

The Stockyard is automatically configured in Outlet 2A when the PrepLink is configured to manage the Power Processor with connected instruments.

Figure 2.6 PrepLink Rack Assignment With G6 Rack Configured



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Sample tubes are routed to the Stockyard for one or more of the following reasons:

- Sample analysis complete
- Reagent is not calibrated, not loaded, or test #/test volume is zero
- Reagent calibration has timed out
- Reagent level sense error
- Reagent level sense pending
- Reagent load requested
- Calibration requested
- Parameter required
- Test bypassed
- Within lot calibration pending
- Connected instruments are in PAUSE mode or Loading Paused
- Remapped Samples

Sample tubes in the Stockyard have a status of Pending until PrepLink receives a completion message for that sample ID from the instrument. At that time, the status changes to Outlet 2A, if all tests are completed.

If the DxI (IDC) instrument is unable to perform any of the pending DxI tests before a sample tube exceeds the Stockyard timeout period, the sample tube is routed to the Pending Rack. The default Stockyard timeout for DxI tests is 80 minutes, but a shorter timeout can be configured for DxI Urgent Chemistries. The Default for Urgent Chemistries is 30 minutes. The lengths of the Stockyard periods are set by a Beckman Coulter Representative during system installation.

If all pending IDC tests become available while a sample tube waits in the Stockyard, the sample tube does not have to wait until the Stockyard timeout has expired. Within minutes the sample tube is retrieved from the Stockyard and routed to the IDC instrument. After the sample is aspirated, the sample tube is routed to the Stockyard to wait for a test completion message.

If one or more (but not all) of the pending IDC tests can be performed on a sample tube that has reached the end of the waiting period in the Stockyard, the system retrieves the sample tube from the Stockyard and sends it to the IDC instrument. After aspiration, the sample tube is routed to the Stockyard. When the timeout expires, the sample tube is routed to the Pending Rack so that the remaining tests can be handled offline by the operator.

If add-on, reflex or rerun sample programming arrives after the analysis of a sample tube is complete and the tube has been sorted to the Stockyard, the system considers the requested tests as new programming. Sample tubes are retrieved from the Stockyard and routed to an instrument or to a rack in Outlet 1A or 1B. If the Rack Number Assignment feature is enabled, sample tubes in the Stockyard with a status of Outlet 2A or 2B will change to a status of Storage when the rack is removed using the Rack Load procedure and a rack number is assigned.

Rerun Requests or Pending Add-on Test Results

To determine the sample ID of the tube(s) with pending tests sorted to Outlet 2A, search for "pending results" at the Data Manager or LIS. To manually retrieve these sample tubes, use the Search by Sample ID function on the PrepLink Locations screen. Rack and position number will be shown if the tube is still in the Stockyard or if Rack Numbering is used for mapping the tube location once racks are removed from the system.

Occasionally, when sample programming includes tests with long instrument incubation times, completed sample tubes can be routed to the Pending Rack.

Pending Rack

The Pending Rack is a subsection of a Generic Rack that serves as a holding area for:

- Sample tubes that have been in the Stockyard previously and still have not been completely processed by the system.
- Sample tubes requiring rerun tests when the system is in Manual Rerun mode.
- Suppressed results or a sample-based error occurs, if this option is configured.

Sample tubes that are routed to the Pending Rack require operator handling, and will not be retrieved from the Pending Rack by the system.

In addition, the Pending Rack is a holding area for tubes that have been retrieved from the Stockyard using the PrepLink Retrieve feature.

The Pending Rack subsection can be either G1, G2, G3 or G7 rack type. Refer to the “Personality Racks” section in CHAPTER 2, of the *General System Operation IFU*, and “Hematology Module Rack Designations” in CHAPTER 2, of the *Inlets, Outlets, Hematology, and Barcode Verification Modules IFU* for a complete listing of all rack types.

IMPORTANT The Pending Rack must be configured by the operator or the system will not function.

How to Configure the Pending Rack

The Pending Rack must be a subsection (sort location) of a Generic Rack. Refer to the “Aliquot Module Configuration” section in CHAPTER 2 of the in the *Aliquot Module IFU*. The operator can select either a G1, G2, G3 or G7 rack type. The G1 rack type is one complete Generic Rack, while the G2, G3 and G7 rack types divide the Generic Rack into one subsection for pending samples and one or more user-defined sorting subsections. Refer to Figure 2.7.

1 Configure and assign either a G1, G2, G3 or G7 rack type to a position in Outlet 1A according to the procedures, “Rack Configuration for Software Versions 3.0 or Lower,” “Rack Configuration for Software Versions 3.1 and Greater,” and “Rack Assignment” in CHAPTER 2, of the *General System Operation IFU*.

2 In the "Outlet Overview" in the upper right of the screen, select the box with the Rack Type of the assigned Generic Rack (**G1**, **G2**, **G3** or **G7**).

3 To configure a region of the rack as Pending in its "Subsection":

a. Select the **Usage** .

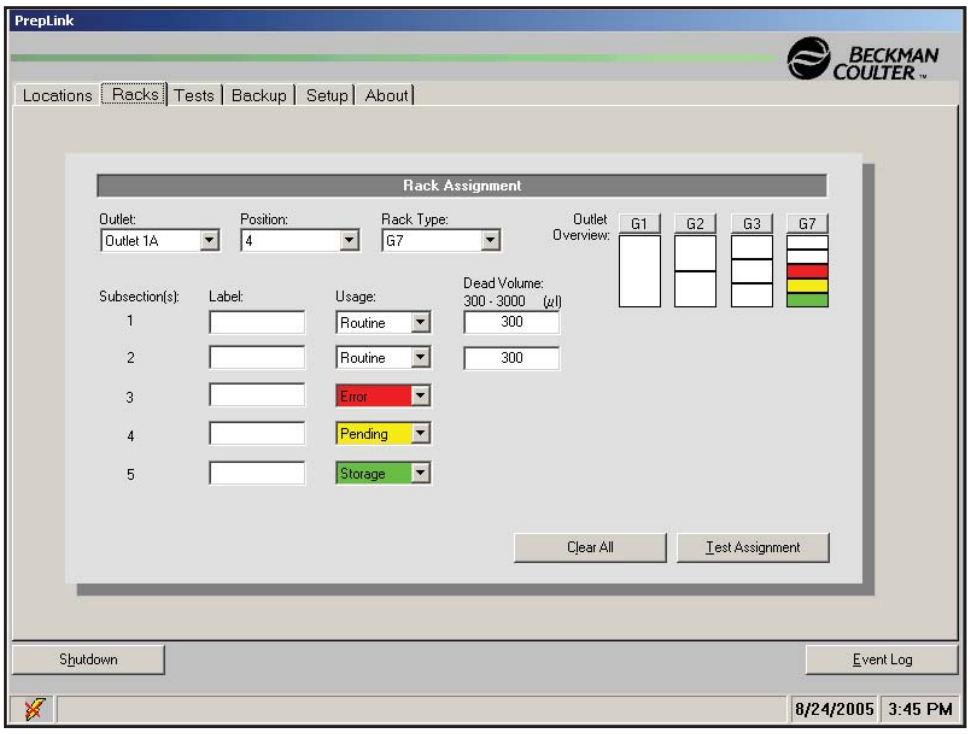
b. Select "Pending."

c. If required, type up to 10 characters in the **Label** text box to identify the subsection.

When correctly configured, the subsection will be highlighted in yellow in the "Outlet Overview."

4 Assign tests to any remaining subsections in the Generic Rack according to the “Test Assignment Procedure” in CHAPTER 2, of the *General System Operation IFU*.

Figure 2.7 PrepLink Rack Assignment Screen for the Pending Rack Subsection



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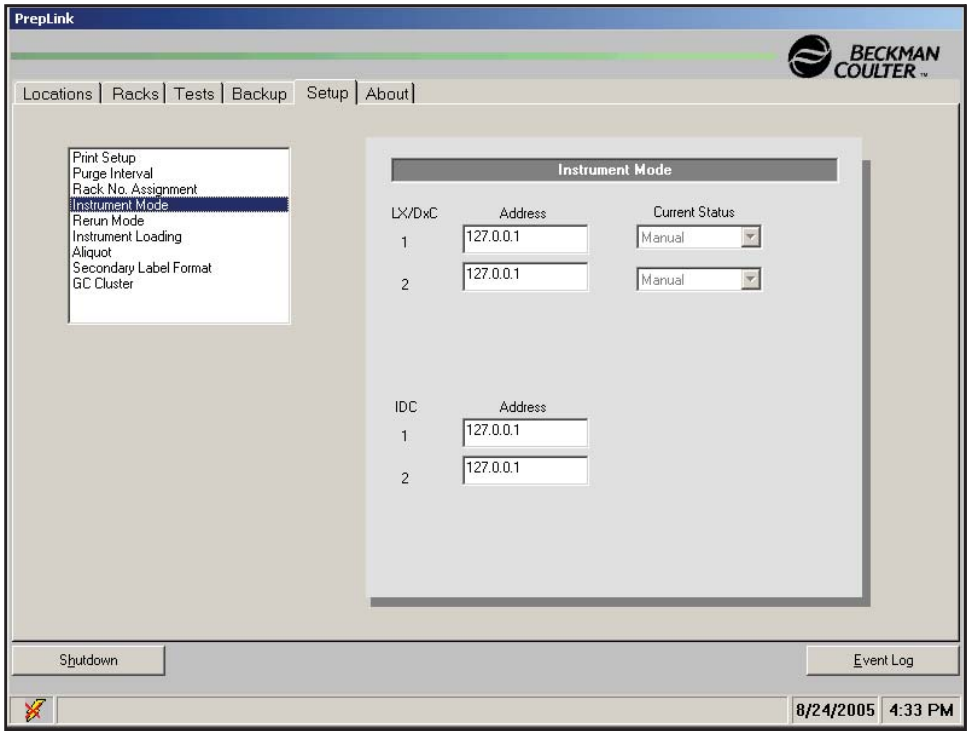
IDC Instrument Setup

Instrument Mode

IMPORTANT To set the amount of time PrepLink waits to purge stored rack map information for samples that have been processed on the instruments, follow the procedure, “How to Set PrepLink Purge Time” in CHAPTER 2, of the *General System Operation IFU*.

The Instrument Mode box on the PrepLink Setup screen shows Internet Protocol (IP) address information for the connected IDC instruments.

Figure 2.8 Instrument Mode Box for Connected Instruments



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Setting the Rerun Mode

When PrepLink is configured for connected instruments, Rerun can be set to Automatic or Manual Rerun mode. When set to Automatic Rerun mode, sample tubes requiring rerun or add-on sample programming are retrieved from the Stockyard and route to connected instruments. When the PrepLink is set to Manual Rerun mode, sample tubes that require rerun analysis are routed to the Pending Rack for the operator to handle offline.

Samples can be retrieved from the Stockyard if the test(s) for rerun or add-on testing are requested at the LIS or Data Manager.

IMPORTANT If the operator removes sample tubes from the system, rerun tests cannot be performed automatically.

How to Set the Rerun Mode

1 Select the PrepLink **Setup** tab.

2 Select **Rerun Mode** from the list on the left side of the screen. A Rerun Mode dialog box appears on the right side of the Setup screen.

3 Select either the **Automatic** or **Manual** button.

Rerun Mode with Dilutions

⚠ CAUTION

When PrepLink is set for Automatic Rerun and a dilution is required for the sample, the operator must intervene so the original tube is not routed to the connected instrument. This could result in a wrong answer if a dilution factor is applied.

To prevent the original tube requiring a dilution from routing to the connected instrument, use the PrepLink Retrieve feature to route the sample tube to the Pending Rack. Once the tube has sorted to the Pending Rack, the rerun can be ordered with a dilution factor at either Data Manager or at the connected instrument.

IMPORTANT If the operator intends to route aliquot tubes to the IDC instruments for Rerun/Add-on testing, Test Volumes or Dead Volumes MUST be increased at the Test Configuration screen to provide sufficient sample volume for the additional testing.

Route Rerun/Add-on to Pending Rack

When PrepLink is configured for IDC instruments and set for system Automatic Rerun, the operator has an additional option to select individual tests for rerun or add-on sample programming to route to the Pending Rack. When the test is selected in the Test Configuration screen, a check box "Route Rerun/Add-on to Pending Rack" is shown. The screen updates to display a "Rerun to Pending" column at the right side of the table. The test selected to route to the Pending Rack shows a "Yes" in the "Rerun to Pending" column. Refer to the “Preparing for Operation” section in *General System Operation IFU.*

How to Enable/Disable the Route Rerun/Add-on to Pending Rack

The operator can select the tests to route to the Pending Rack by following the procedure below. Refer to Figure 2.1, Test Configuration Screen with Generic Connections Configured on page 2-2.

1 Select **Tests** tab.

2 Double-click on the test. The test row will be highlighted on the screen.

3 To **enable** the feature:

- Select ☑ "Route Rerun/Add-on to Pending Rack."
- Select **Save**.

  The screen will update and "Yes" will display in the "Rerun to Pending" column for the test.

To **disable** the feature:

- Deselect ☐ "Route Rerun/Add-on to Pending Rack."
- Select **Save**.

The screen will update and the "Rerun to Pending" column will be empty for the test.

4 Shutdown and restart PrepLink to apply any changes.

Reflex and Add-On Tests

Sample tubes with reflex sample programming that can be run on connected instruments are automatically retrieved from the Stockyard and routed to connected instruments for analysis. Sample tubes with reflex sample programming for tests that are configured to racks in Outlet #1 are retrieved from the Stockyard and routed to those racks. If rerun, reflex or add-on programming is received on a sample tube that is in the Pending Rack, the operator must handle that sample tube offline.

IMPORTANT If the operator removes sample tubes from the system, reflex, rerun and add-on tests cannot be performed automatically.

IMPORTANT If the operator performs the sample retrieve process such that sample tubes are retrieved to the Pending Rack, *and* add-on sample programming is subsequently received at PrepLink, the add-on tests cannot be performed automatically. The operator must handle the sample tube from the Pending Rack offline. If the add-on tests are applicable to the primary sample tube remaining in the stockyard, the add-on tests can be processed.

Samples can be retrieved from the Stockyard for additional testing if the additional testing is requested at the LIS or Data Manager. Additional testing requested at the instruments will not be managed by the automation system.

IMPORTANT If an instrument does not read a sample bar code and does not run any tests on the sample, PrepLink does not process any add-on or re-run requests for this sample. PrepLink sorts the sample tube to the next available instrument, if applicable, or to the Stockyard. After the timeout, it moves the sample tube to the Pending Rack.

Aliquot Module

For instruments configured with an Aliquot Module, refer to Aliquot Priority on page 2-10 and Always Create an Aliquot Tube Feature with Generic and IDC Connections on page 2-11.

Operation

IMPORTANT Connected IDC instruments should be put into Loading Pause before being powered up and calibrated.

IDC instruments update PrepLink when there is a change of reagent status.

If one instrument runs out of reagent or needs calibration, the system routes sample tubes to the other instrument (if one or more of the tests can be performed), or to the Stockyard. When the instrument is able to perform tests again, sample tubes can be retrieved and routed back to the instrument if the sample tube has not been routed to Pending. Refer to the Stockyard section on page 2-13 for more information.

IMPORTANT For the DxI, sample tubes can be manually loaded onto the front of the instrument at any time. Manually loaded tubes are processed before tubes on the track.

The DxI instrument's front load can be used to run calibrators, controls or other samples. Racks containing calibrators and controls are off-loaded normally.

STAT Sample Processing

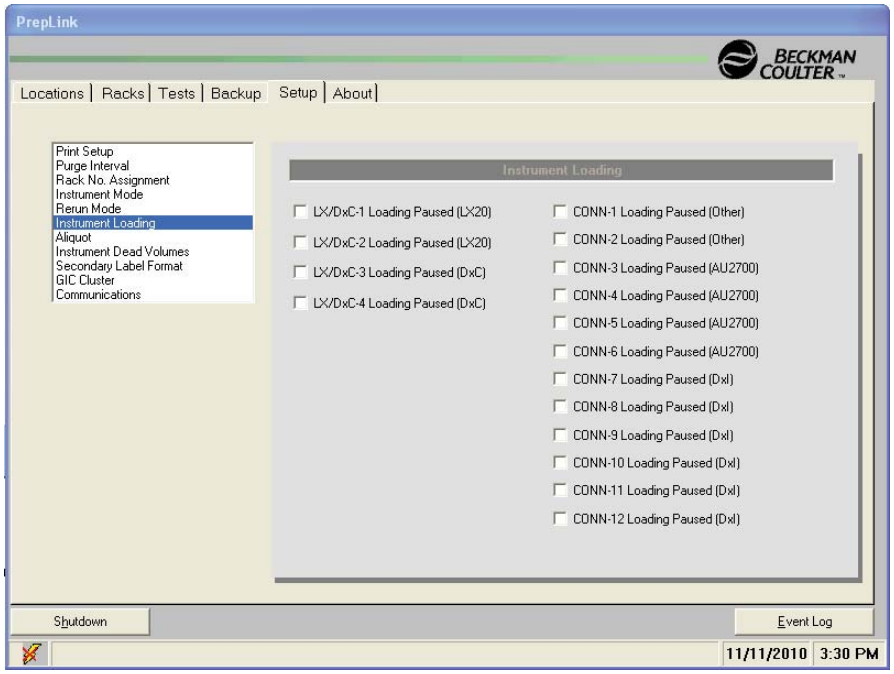
The operator can manually load STAT sample tubes onto connected DxI instruments by pressing the FRONT LOAD button on the DxI instrument. After these samples have been analyzed, the instrument unloads them per normal DxI operations.

Pause the IDC Module

Configured connections are shown on the Instrument Loading screen of the **Setup** tab. IDC and Generic Connections appear identical on this screen. Refer to Figure 2.9. The operator can select to pause one or more of the Connection Modules by checking the box in front of the connection.

Once the connection is paused, sample tubes queued in the Module will process and return to the main track. However, additional sample tubes will NOT route to the paused connection. Instead, the sample tubes can route to other available instruments for testing. If no tests can be run on other connected instruments, the sample tubes route to the Stockyard until the Stockyard time-out expires. If the paused connection becomes available before the time out is complete, the sample tube routes to the connection. If the time out completes before the paused connection is available, the sample tube routes to the Pending Rack.

Figure 2.9 PrepLink Setup Tab Showing the Instrument Loading Screen with LX/DxC and IDC/Generic Connections Shown



How to Pause the Connection Module

1 Select the PrepLink **Setup** tab.

2 Select **Instrument Loading** from the list on the left side of the screen. An Instrument Loading dialog box appears on the right side of the Setup screen.

3 To pause a Module, from the Instrument Loading dialog box, select the ☑ next to the appropriate Generic Connection Module. Sample tubes will not be routed to the Connection Module until Generic Connection Loading Pause is disabled.

Print Pending Rack Maps

The operator can print the sample ID and position (by subsection and location) of sample tubes in the Pending Rack.

IMPORTANT The system is unable to print a rack map if the Pending Rack has been removed. Print the contents of the Pending Rack before removing the rack from the outlet.

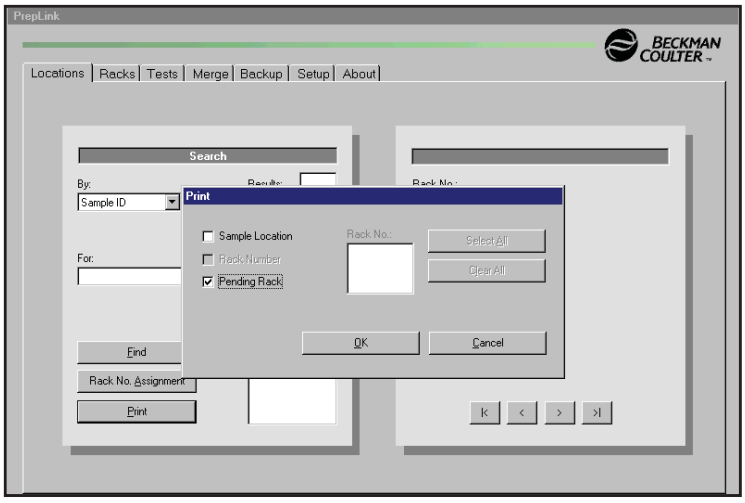
How to Print the Pending Rack

1 In the Locations screen, select the **Print** button. A Print dialog box appears. Refer to Figure 2.10.

2 In the Print dialog box, select the **Pending Rack** ☑.

3 Select the **OK** button.

Figure 2.10 Print Dialog Box



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Basic Tube Routing

Figure 2.11 Tube Routing Diagram for Systems with IDC Connections (1 of 3)

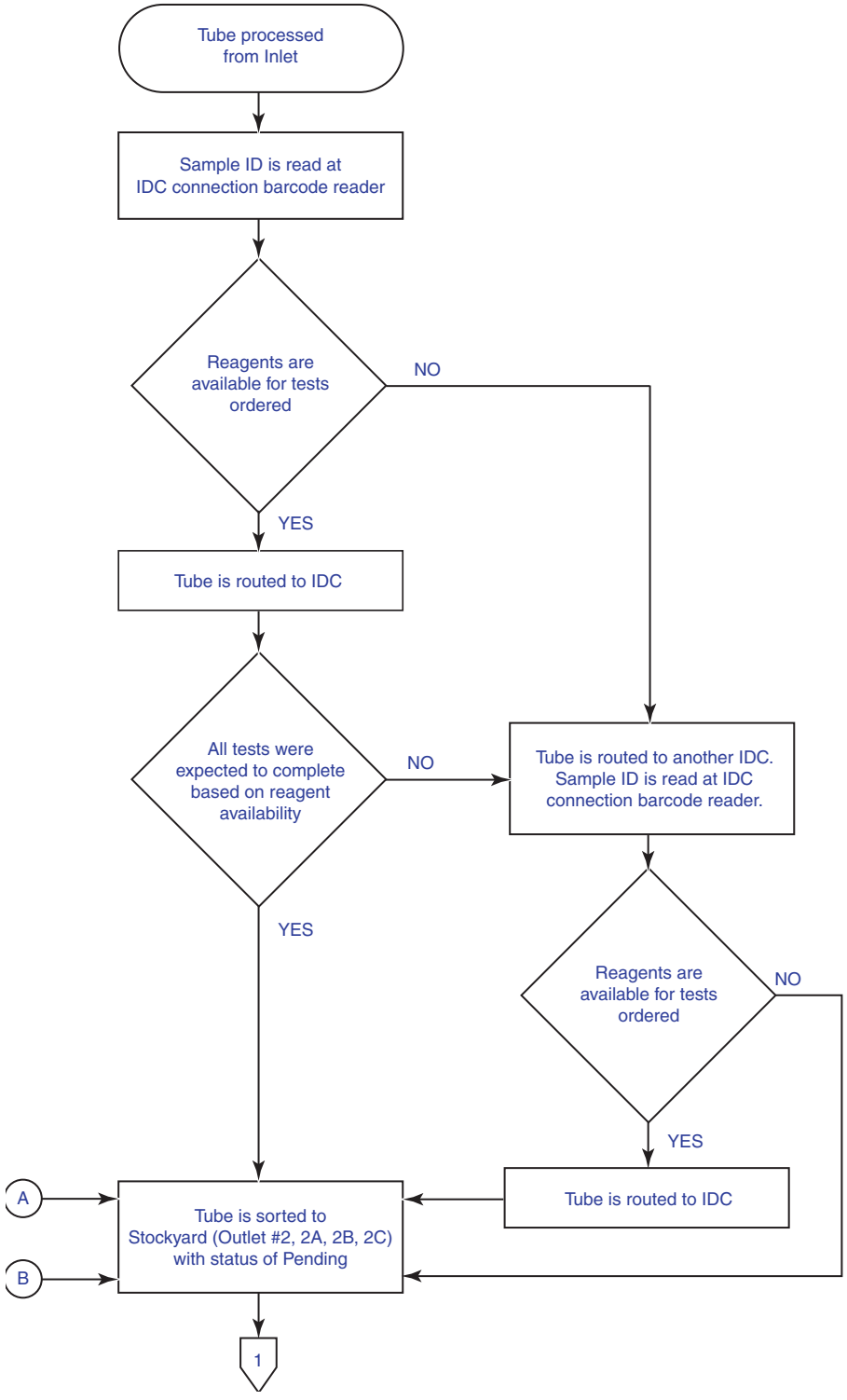


Figure 2.12 Tube Routing Diagram for Systems with IDC Connections (2 of 3)

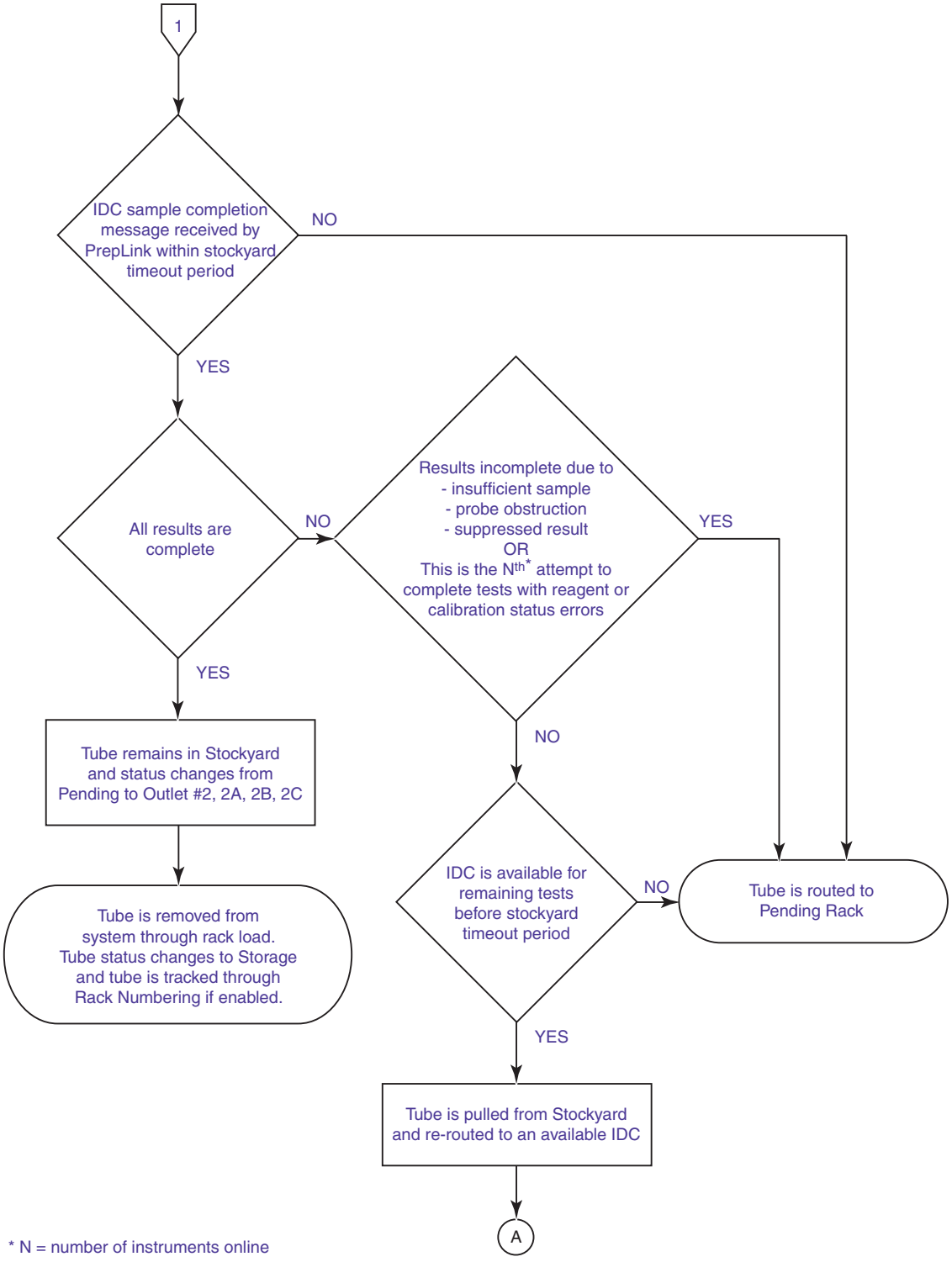
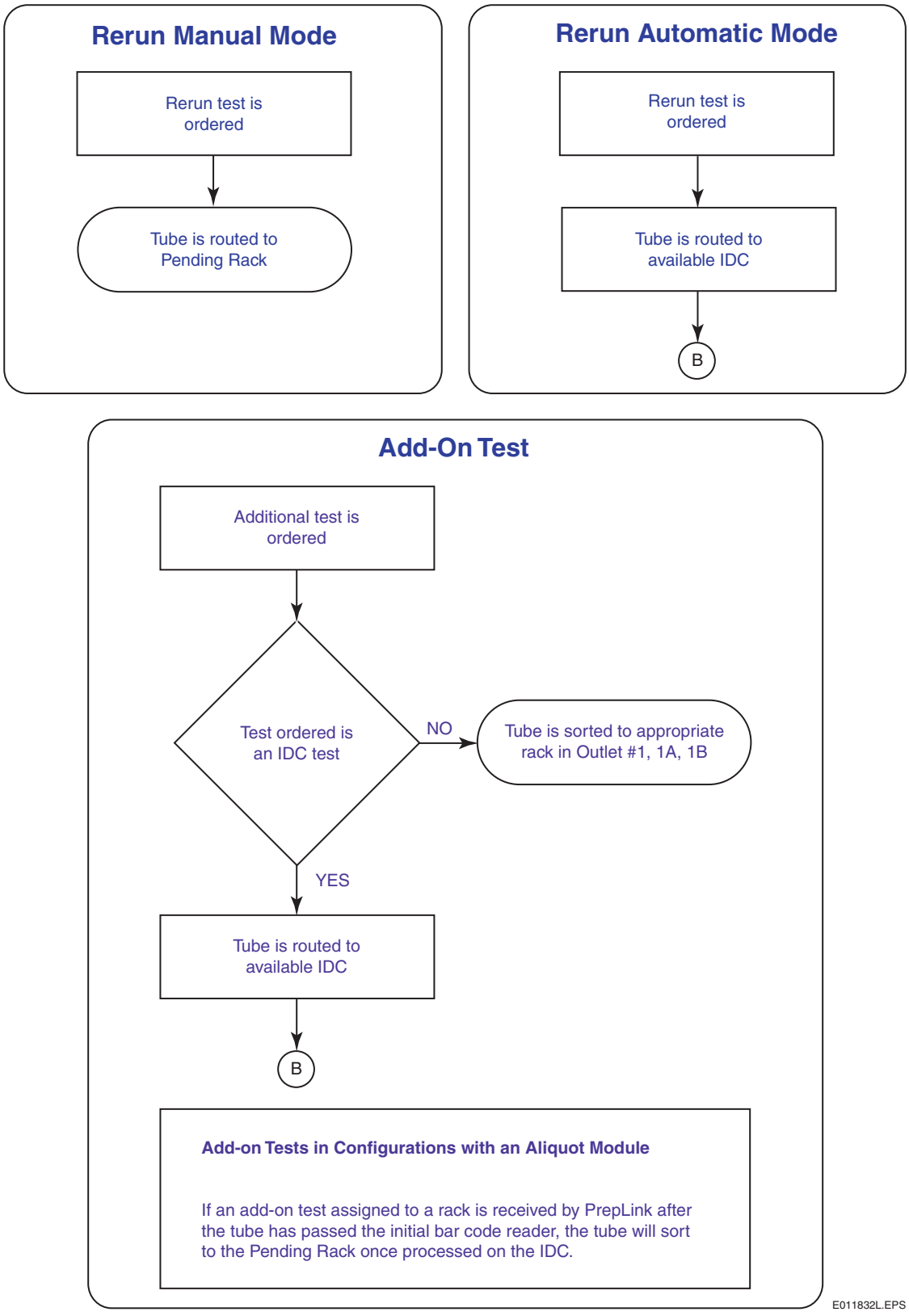


Figure 2.13 Tube Routing Diagram for Systems with IDC Connections (3 of 3)



CHAPTER 3

Error Recovery Procedures

This chapter provides information to identify and resolve errors related to the Generic/IDC and DxI Connection modules, as well as system operational errors that are not specific to any Power Processor module.

NOTE For error recovery information for other Power Processor Modules, refer to the appropriate Power Processor Module Instructions for Use.

⚠ WARNING

Perform Power Processor maintenance activities with caution.

Wear appropriate Personal Protective Equipment (PPE), such as gloves, eye shields, lab coats, etc.

Wash hands thoroughly after contact with sample media and after all maintenance activities.

Observe appropriate laboratory policies and procedures related to the handling of biohazardous materials.

Refer to the appropriate sources (Material Safety Data Sheets, etc.) for specific hazard information.

⚠ CAUTION

Before performing an error recovery procedure, make sure that the PAUSE button is lit on that module.

⚠ CAUTION

Even when the Generic/IDC and DxI Connection Modules are in PAUSE mode, the air system is still active and applying a constant air pressure to the tube gripper assembly arm. This may cause unexpected movement of the gripper assembly arm when resolving a jammed object error creating a possible moving part or pinch hazard. Use caution when resolving jammed object errors at the Generic/IDC and DxI ConnectionModules.

Contact a Beckman Coulter Representative for assistance resolving operational issues not discussed in this chapter.

Error Recovery General Information

When an error condition occurs, the system generates an error message, sounds an alarm and flashes a warning beacon. Error messages are shown on the keypad of the module where the error has occurred, and in the Line Control Computer System Event Log, except for the Inlet, Decapper, Recapper and the Secondary Decapper. The System Event Log automatically stores the 200 most recent error messages in the order they occurred.

Power Processor Module Function Codes

The procedure to recover from an error condition can include entering one or more Function Codes into one of the keypads on the Power Processor or a connected instrument.

Table 3.1 lists the Power Processor Module Function Codes associated with Generic/IDC and DxI Connections modules, with descriptions of the action triggered by the Function Code. All Function Codes must be entered in MANUAL mode.

Table 3.1 Generic/IDC and DxI Connection Modules Function Code Definitions

Unit	Function Code	Definition
IDC/GC #1 thru #12	01	Lane through

General Error Recovery Procedure

When an error occurs at a hardware module, a flashing beacon and audible alarm activate. The keypad display at the affected module will show which error code the error generated. This error code is a four-digit numeral that the keypad display shows in 2, two-digit segments.

The procedure below should be performed any time an error occurs on the system.

1. Read the two-digit code from the keypad display on the affected hardware module.
2. Press the **ALARM** button on the keypad of the affected hardware module to silence the alarm.
3. Press one or both of the **FUNCTION +/-** buttons on the keypad to view the second two-digit code from the keypad display.
4. Refer to the Error Code tables for the appropriate hardware module. For example, if the error occurs at the Generic/IDC and DxI Connection, refer to Table 4.3, Generic/IDC Connection Module on page 4-4.
5. Look up the code in the "Keypad Display" column of the error code table.

6 Read the information in the "Sensor," "Problem" and "Solution" columns for that error code. Do not attempt to perform steps suggested in the Solution column yet.

7 Locate the sensor on the appropriate Sensor Diagram.

8 Spend a moment looking at the hardware. Try to find the cause of the error.

9 After investigating the cause of the error, perform the steps suggested in the "Solution" column.

10 Press **PAUSE/RUN** to resume routine operation. Pay attention to the area around the sensor that generated the error. Make sure that the error has been resolved.

11 If the error persists, repeat this procedure. Contact your local Beckman Coulter Representative for any unrecoverable errors.

System Error Recovery Procedures

This section provides information to identify and resolve errors related to system operational problems.

System Error Recovery Procedures include:

- Gripper Finger Error Recovery
- Jammed Sample Tube Carrier Recovery
- Bypassing a Module
- Flashing AUTO/MANUAL Button on keypad(s)
- Stop Button Recovery with Instrument Connections

Gripper Finger Error Recovery

Error Recovery

The operator must evaluate gripper finger/transfer arm errors to understand where the error occurred in the loading or unloading process. Study sample tube positioning and the Error Tables to resolve gripper finger errors.

⚠ CAUTION

Even when a module is in PAUSE mode, gripper fingers can open or close unexpectedly, creating a possible pinch hazard. Use caution when resolving the gripper finger error conditions.

Jammed Sample Tube Carrier Recovery

The Power Processor system uses a series of sensors and stoppers to control the movement of sample tube carriers through the system. The pneumatic stoppers engage and disengage to halt sample tube carriers at specific locations. If a sensor is out of adjustment, the stopper can engage as a sample tube carrier passes by, pinching the sample tube carrier and causing a jam. When a sample tube carrier becomes jammed, the system generates an error message, sounds an alarm and flashes a warning beacon.

⚠ CAUTION

Before attempting to release a jammed carrier, verify that the carrier is really jammed by gently pushing it in the opposite direction that the conveyor belt is moving. After doing this, if the carrier moves easily up the track, it is NOT jammed and this procedure must NOT be used. Refer to the following NOTE for corrective action.

NOTE If the carrier moves easily up the track, check the sensor number nearest the stopped sample carrier and refer to the appropriate error code table to resolve the error. Contact your Beckman Coulter Representative for assistance.

Error Recovery

To recover from a jammed sample tube carrier error, follow this procedure (refer to Figure 3.1).

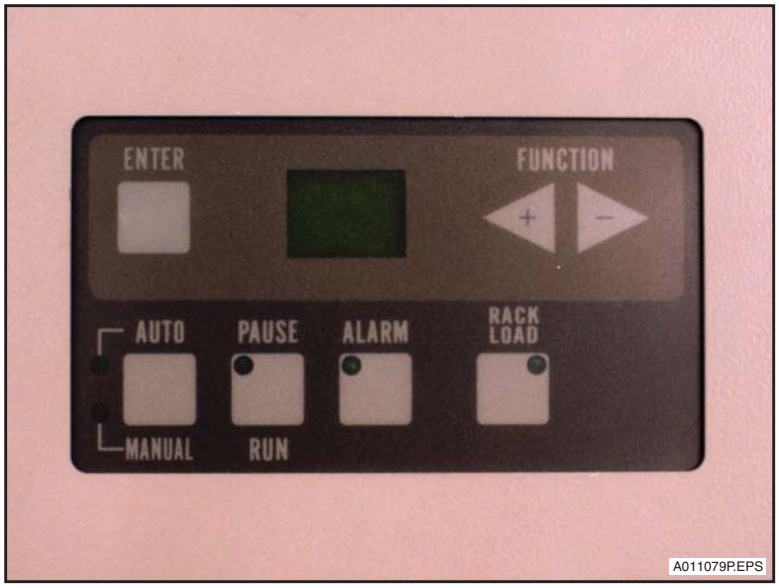
1 Press the **ALARM** button on the keypad to silence the alarm.

2 Gently push the sample tube carrier in the direction that the belt is moving until it "clicks" free.

IMPORTANT A jammed tube carrier should move with only a moderate amount of force. Excessive pressure may damage the system.

3 Press the **PAUSE/RUN** button to resume routine operation.

Figure 3.1 Module Keypad (can vary slightly)



Bypassing a Module

When a module is bypassed, transfer belts move sample tube carriers through the system. Sample tube carriers can be bypassed at all modules by following the same procedure.

How to Bypass a Module

Any module of the Power Processor system can be bypassed using the procedure below. When bypassing the Centrifuge, this must be done at the Centrifuge Track keypad(s).

1. Press the **AUTO**/**MANUAL** button twice to switch to MANUAL mode. The AUTO/MANUAL button indicator light flashes, then stays lit to indicate that the module is in MANUAL mode.
2. Press the **FUNCTION +/-** buttons to set the readout to "01."
3. Press the **ENTER** button on each module keypad(s).
4. Wait for all sample tube carriers to pass through the module.
5. Press the **AUTO**/**MANUAL** button twice to return the module to AUTO mode.

Flashing AUTO/MANUAL Button on keypad(s)

Error Recovery

To recover from a condition where the AUTO/MANUAL button flashes continuously on the module keypad(s) and the module cannot be recovered, follow the steps below.

IMPORTANT If an error occurs once a module returns to AUTO mode, press **PAUSE**/**RUN** to clear the error.

IMPORTANT The following procedure applies to Inlet, Outlet, Centrifuge, Connection Module and Aliquot keypads.

Error Recovery Procedure

1 Press and hold the flashing **AUTO**/**MANUAL** button for at least 10 seconds on the keypad(s). The keypad(s) changes to MANUAL mode.

If the condition occurs at...	Then...
the Bar Code Verification Module in front of the bar code reader,	remove the sample tube from the sample tube carrier and process the tube offline.
the Hematology Outlet and a sample tube is being placed in a personality or generic rack,	remove the sample tube from the gripper fingers and place in the appropriate rack.
the LX/DxC Connection Module and sample tubes are being placed in the Unload Shuttle, OR the sample tubes are in the Load Shuttle, or being placed in the Load Shuttle, OR there is a sample tube in front of the bar code reader in the LX/DxC Connection Module,	remove the sample tubes from the Unload Shuttle and place in the waiting sample tube carriers. remove the sample tubes and process the tubes offline. remove the sample tube from the sample tube carrier and process the tube offline.
the Generic (CLSI)/IDC Connection Module,	clear sample tubes in the queue (from BCR#3 to BCR#2) by entering Function 84 at the Generic Connection processing keypad(s). These sample tubes must be processed offline.
the 1K or 3K Stockyard and a sample tube is being loaded into the Stockyard, OR the sample tube is being unloaded from the Stockyard,	remove the sample tube from the sample tube carrier. remove the sample tube from the Retrieve Arm and place in the waiting sample tube carrier.

2 Press the **AUTO**/**MANUAL** button twice to return to AUTO mode at the module keypad. The module Homes and sample processing continues.

IMPORTANT If an error occurs once a module returns to AUTO mode, press **PAUSE**/**RUN** to clear the error.

Stop Button Recovery with Instrument Connections

If the STOP button at any Power Processor module (except the Centrifuge Stop Button) is pressed when samples are on the instrument(s), follow the procedure below to recover.

NOTE If the Centrifuge Stop Button is pressed, refer to the procedure, *Stop Button Recovery for the Centrifuge* in the *Centrifuge IFU*.

This procedure includes all module options and supported instrument types. Only perform steps for modules and instruments that are specific to the laboratory's system configuration.

IMPORTANT The STOP button can be pressed to halt any hazardous condition.

IMPORTANT If a sample tube breaks in the Load or Unload Shuttle on the instrument Connection Module and all debris can be completely removed from the shuttle, proceed with established laboratory cleanup procedures. If all debris **CANNOT** be removed from the shuttle, contact your local Beckman Coulter Representative.

IMPORTANT The location of the last sample tube sorted by the system may not be accurately represented at the Sample Locations screen.

⚠ CAUTION

For system configurations with the Aliquot Module, when a STOP button is pressed, aliquot tips containing serum sample will drip very slowly. The Serum Drip Trays may need to be cleaned. For information on how to clean the serum drip trays, refer to CHAPTER 5, *"Daily Maintenance Procedures"* in the *General System Operation IFU*.

Stop Button Recovery

IMPORTANT Only perform the STOP Button Recovery steps that apply to the laboratory's specific Power Processor configuration.

Perform the system recoveries beginning with the LX/DxC connected instruments, Aliquot Module, and Outlet or Stockyard at the end of the track, and work your way towards the Inlet Module. Correct any errors on each module and place modules back in AUTO mode, recovering backward to the Inlet.

1 Let the instrument(s) continue to run and process samples.

2 If sample tubes are in the quadruple-gripper transfer arm of the LX/DxC connection unit, do the following to remove them:

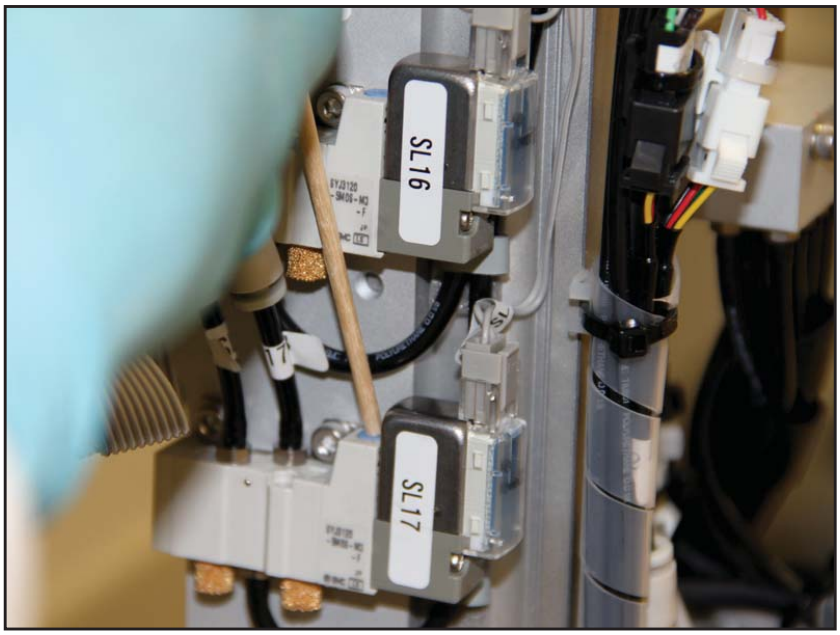
a. Open the access door above the LX/DxC auto-loader to gain access to the quadruple-gripper transfer arm.

b. Reach through the access door and manually pull the transfer arm toward the door so the grippers can be accessed from the door opening.

c. Locate solenoid SL17 on the transfer arm and note the button on top of the solenoid. This button can be either blue or orange. (Refer to Figure 3.2)

NOTE This button will open the quadruple-grippers. **Do Not** press this button until you have inserted a LX/DxC loading rack under the tubes to hold them in place when the grippers open.

Figure 3.2 Gripper release solenoid SL17

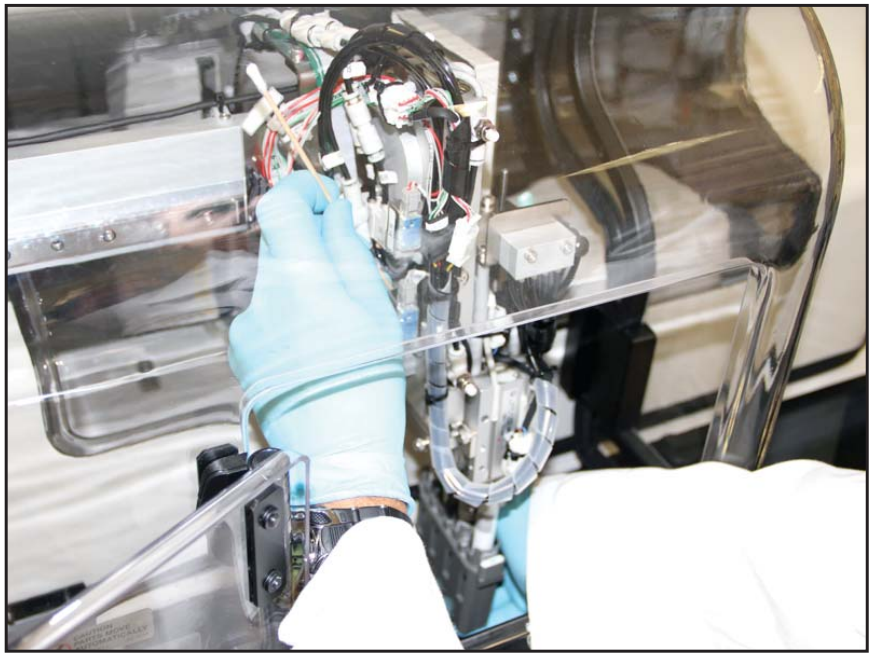


d. Place a LX/DxC rack under the tubes, raise it so the tubes are inside the rack and hold it in place.

e. While holding the LX/DxC rack with tubes securely in the rack, use the end of a lab swab or other implement to push the button on top of solenoid SL17. The grippers will open and the tubes can be removed. (Refer to Figure 3.3)

NOTE Hold down the button securely to keep the grippers open while you remove the tubes.

Figure 3.3 Opening the quadruple-grippers



f. Lower the rack and tubes, and then release the solenoid button.

g. Remove the rack and tubes and close the access door.

3 Check the sample tube status at the LX/DxC instrument console to see if they are completed.

If...	Then...
samples are completed,	transfer these tubes to the sample tube carriers that are waiting to be unloaded at the Connection Module once the Connection Module is put back in AUTO mode.
samples are not completed,	transfer these tubes to an offline instrument rack in the output tray on the right side of the instrument.

4 Remove sample tubes from the racks in the LX/DxC instrument load tray. Transfer these tubes to another rack(s) and put this rack(s) in the output tray on the right side of the instrument(s).

5 Remove sample tubes from the instrument load shuttle. Place these tubes into another rack and place this rack in the output tray on the right side of the instrument.

6 Check instrument console to make sure that the instrument is functional. If it is not, refer to the instrument IFU for instructions on restoring the instrument to operation.

7 Process the racks in the right side output tray using **PRIORITY LOAD**. When these samples are completed, transfer these tubes to sample tube carriers that are waiting for unloading at the Connection Module after the Connection Module is placed back into AUTO mode. Process a maximum of 2 racks at a time to allow the automation system to continue loading racks onto the LX/DxC instrument once the track is re-started.

8 Disengage the **STOP** button by pressing the button(s) again.

9 For system configurations with the Aliquot Module, lift and raise the aliquot tip Transfer Arms.

10 Remove the stockyard splash guard cover.

11 Remove the sample tube from the stockyard grippers. The Home position for the input arm opens the grippers and the sample tube falls after the stockyard is put in AUTO mode.

If...	Then...
the STOP button was pressed during a sample tube retrieval from the stockyard,	remove the sample tube(s) in the stockyard from all gripper fingers (inside and back) and loading or unloading shuttles.
a tube was stuck on or between the third shelf,	remove the protective rear cover to retrieve the sample.

12 Replace the stockyard splash guard cover.

13 Open each large capacity stockyard door and check each rack for tubes that fell inside or behind the stockyard during the stop procedure. Remove all fallen tubes.

14 At the PrepLink **<Locations>** tab, search by Sample ID and record the location for each tube removed from the stockyard. Put all samples shown on the **<Locations>** tab back in their identified rack locations. Process any samples that are not shown on the **<Locations>** tab OFFLINE.

15 At Outlet Modules 1A and 1B, if any sample tubes are present in the gripper fingers, manually remove the tubes and process OFFLINE.

16 Press the green **ON** button on the Inlet Module to restore power to the system.

17 At Outlet Modules 1A and 1B, set the **AUTO/MANUAL** button to AUTO mode.

18 Set the **AUTO/MANUAL** button on the Secondary Decapper to AUTO mode.

19 If there are no large capacity stockyard errors, proceed to step 21.

If...	Then...
the STOP button was pressed during a sample tube load at the stockyard, with a tube in the grippers,	after powering ON, wait for the arm to move to the second shelf input area.

20 At the large capacity stockyard keypad(s), press the **PAUSE/RUN** button.

21 At the large capacity stockyard keypad(s), set the **AUTO/MANUAL** button to AUTO mode.

22 Set the **AUTO/MANUAL** button on the Recapper to AUTO mode.

23 If there are no sample tubes at the Recapper, proceed to step 30.

24 Check for caps in the Recapper chute.

- **a.** At the Recapper, open the front and rear doors.
- **b.** Look for caps in the chute and lateral cap pusher (1).
- **c.** If there are caps, proceed to step 25. If there are no caps, proceed to step 26.

25 To remove caps from the chute:

- **a.** From the *rear* of the Recapper, lift and remove the curved (clear plastic) cap deflector (3) from over the chute loop.
- **b.** Remove all caps in the chute.
- **c.** Reinstall the cap deflector.

26 From the *rear* of the Recapper, remove caps from the lateral cap pusher:

a. If there are sample tubes in the capping area, push them back on the track.

b. Remove all caps at the lateral cap pusher. If there is a cap in the metal cylinder, use a flat head screwdriver to push the cap down and out of the cylinder. Make sure there are no caps on the track.

IMPORTANT If one or more caps stay in the lateral cap pusher, there may be a 2_10 error.

27 In the Recapper:

If...	Then...
there is a sample tube *with* a cap,	remove the sample tube from its sample tube carrier. **IMPORTANT** If the capped tube stays in its sample tube carrier, there will be a 1_06 error.
there is a sample tube *without* a cap,	do NOT remove the sample tube from its sample tube carrier.

28 At the Recapper, set the **AUTO/MANUAL** button to AUTO mode.

If...	Then...
there is a sample tube *without* a cap,	the Recapper puts a cap on the sample tube.
a sample tube *with* a cap was removed in step 27.	the empty sample tube carrier will route to the bar code reader at the large capacity stockyard. Put the capped tube in the sample tube carrier.

29 Follow the instructions in the Error Code section for any errors that occur at the Recapper. Refer to the *Decapper and Recapper Modules IFU*.

30 Make sure there are 8 empty automation racks in the LX/DxC instrument load tray. (Refer to the "Returning LX/DxC Load Tray to 8 Racks" procedure in the *LX and DxC Connection Modules IFU*.) Set the **AUTO/MANUAL** button on the Connection Module to AUTO mode.

31 Remove any remaining tubes from the instrument(s) unload tray and transfer them to the sample tube carriers that are waiting for unloading at the Connection Module.

IMPORTANT Pause the Connection Module while placing tubes into carriers. Press **PAUSE/RUN** to resume processing.

32 At the Generic Connection Modules:

If...	Then...
the Generic Connection is an AU connection,	contact your local Beckman Coulter Representative for error recovery instructions for this module.
a sample tube is at the aspiration location,	check the Sample ID status at the Generic or IDC Connection instrument(s). If the sample is in process, it will go to sample completion.
the sample *was* aspirated before the STOP button was pressed,	sample processing will continue at the instrument(s).
the sample *was NOT* aspirated before the STOP button was pressed,	the sample must be processed OFFLINE.

33 Sample tubes in the queue (from BCR03 to BCR02), must be processed OFFLINE. At the processing keypad, press **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.

34 After the sample queue is cleared, set the **AUTO/MANUAL** button at each Generic and IDC Connection Module keypad to AUTO mode.

35 Set the **AUTO/MANUAL** button on the H-Lane to AUTO mode.

36 For system configurations with an Aliquot Module and a sample tube in front of bar code reader #1, place a blockage between the sample at bar code reader #1 and the samples that may be preceding bar code reader #1 in the Aliquot Unit.

37 At the Aliquot Unit, press the **FUNCTION** +/- buttons to set the readout to "84" and press **ENTER**. Any sample tubes that were not aliquoted, will route to Aliquot Error Rack.

38 At the Labeler Unit, remove any dropped aliquot tubes from the top of the aliquot tube tray, in the roller area, and in the aliquot tube chute.

39 Set the **AUTO/MANUAL** button on the Labeler Unit to AUTO mode. Aliquot sample tubes that were being processed will be discarded into the defective aliquot tube disposal container.

40 Set the **AUTO/MANUAL** button on the Aliquot Unit to AUTO mode. The aliquot tip Transfer Arms will move forward and discard the aliquot tips into the biohazard container. The primary tubes will sort to the Aliquot Error Rack.

41 At the bar code reader #1 in the Aliquot Unit, remove the blockage that was set there in step 36.

42 Set the **AUTO/MANUAL** button on the Decapper to AUTO mode. Waiting sample tubes will be decapped.

43 If there are no sample tubes present at the Serum Level Detector Unit, set the **AUTO/MANUAL** button to AUTO mode. Proceed to step 47.

44 If tubes are present in the Serum Level Detector gripper fingers, or in the optical wells, remove the tubes and place them in sample tube carriers inside the Serum Level Detector Unit.

45 At the Serum Level Detector keypad, press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**. This will move the sample tube carriers from the Serum Level Detector Unit.

46 Set the **AUTO/MANUAL** button on the Serum Level Detector Unit to AUTO mode.

47 If there are no samples at the Centrifuge, set the **AUTO/MANUAL** button to AUTO mode and proceed to step 66.

48 If a sample tube is present in front of the Centrifuge Track bar code reader, it may proceed down the track and bypass the Centrifuge when the Centrifuge is set to AUTO mode in step 65. This could be a problem if that tube required centrifugation.

- **a.** Check the sample programming to determine if the tube requires centrifugation.
- **b.** If centrifugation is needed, set the sample tube aside and record the sample ID (identification of this tube will be needed in step 61b).
- **c.** If centrifugation is not needed, do not remove the tube.

49 Turn the Centrifuge power OFF and remove the Centrifuge safety shield.

50 Remove any sample tubes or balance tubes from the grippers. Set them aside and determine if these tubes were being loaded or unloaded from the Centrifuge.

51 Make sure there are no jammed sample tube carriers in the Centrifuge Track queue (D-Lane).

52 Remove any sample tubes from sample tube carriers that have entered the Centrifuge Track D-Lane. Set them aside and determine if these tubes were being loaded or unloaded from the Centrifuge.

53 Push the Centrifuge Transfer-arm to the Home position over the loading area of the Centrifuge Track D-Lane.

54 Turn the Centrifuge power ON. Make sure the Centrifuge is in MANUAL mode.

55 Turn the Door Release Lock switch to the right to unlock the Centrifuge. If the Centrifuge does not unlock, make sure that the Centrifuge Transfer-arm is completely in the Home position.

56 Open the Centrifuge lid.

- **a.** If there are tubes in the Centrifuge, follow your laboratory policy to determine if the tubes have been fully spun or need to be re-spun. If they need to be re-spun, proceed to step 57.
- **b.** If you determine that the tubes do not need to be re-spun, proceed to step 61c.
- **c.** If there are no tubes in the Centrifuge, proceed to step 57.

57 Manually load the Centrifuge with the tubes set aside in steps 48b, 50, and 52 that needed to be spun. Make sure the load is balanced.

58 Close the Centrifuge lid and make sure both latches are secure.

59 Ensure that the Centrifuge is in MANUAL mode.

60 On the Centrifuge, press the **FUNCTION +/-** buttons to set the readout to "80" and press **ENTER**. Press the **PAUSE/RUN** button to start centrifugation.

61 After centrifugation is complete,

- **a.** Turn the release door switch to the Right to open the Centrifuge lid.

b. Manually unload the sample tube from step 48b and return it to the empty carrier in front of the Centrifuge Track bar code reader.

c. Manually unload the sample tubes into the sample tube carriers in the Centrifuge Track D-Lane.

d. Close the Centrifuge lid and make sure both latches are secure.

e. Replace the Centrifuge safety shield.

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62 If there were any tubes set aside in step 50 and 52 that did not need to be re-spun, manually load those tubes into the sample tube carriers in the Centrifuge Track D-Lane.

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63 On the Centrifuge Track keypad, ensure the Centrifuge is in MANUAL mode. Press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.

---

64 On the Centrifuge keypad, **PAUSE/RUN** button to move the sample tube carriers from Centrifuge Track D-Lane area.

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65 Once all the sample tubes have cleared the last Centrifuge Track D-Lane, set the **AUTO/MANUAL** button on the Centrifuge to AUTO mode.

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66 If the system is configured with a Hematology Outlet,

- remove the tube from the gripper fingers and process OFFLINE. Set the **AUTO/MANUAL** button to AUTO mode.

If the system is configured with a Bar Code Verification Module,

- set the **AUTO/MANUAL** button to AUTO mode.

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67 At the Inlet Module...

- If any samples are still in the Inlet gripper finger(s), they must be removed and placed back into the partially unloaded rack.
- If a partially unloaded rack (any four Inlet racks) needs to be processed, place a sample tube in location #1 of the rack and move all tubes forward so there are no empty tube positions.

IMPORTANT For a Dynamic Inlet, this step is especially important if the rack that is being processed is a Priority Rack, as an empty tube position will cause the Priority Rack to be ignored.

- Finally, set the **AUTO/MANUAL** button to AUTO mode to continue sample tube processing.

CHAPTER 4

Troubleshooting

This chapter provides important troubleshooting information on how to locate and resolve problems with the Generic/IDC and DxI Connection module. It is divided into 2 sections:

- Error Code Tables
- Sensor Diagrams

NOTE L and H- Lane, and Smart H-Lane error code tables and sensor diagrams are also included in this chapter.

Error Code Tables

The Error Code tables describe error messages generated by the Power Processor system. The tables provide system error codes, a brief explanation of the possible problem, and possible solutions.

Error Code Explanation

The "Error Code" column contains the alphanumeric codes as they appear in the Line Control Computer Error Log. These codes, (SN09 PAS for example) refer to specific sensors on the track.

The "Keypad Display" column contains the codes shown on the keypads located at each module of the system.

The "Problem" column provides a description of the cause of the error.

The "Solution" column provides a way to resolve an error condition.

Nomenclature

Table 4.1 contains definitions of the alphabetic portion of error codes found in the "Error Code" column of the following Error Code tables.

Use this table and the color diagrams in the section Sensor Diagrams on page 4-16 to locate errors on the system.

Table 4.1 Error Code Definitions

Code	Definition
AM	AC synchronous motor
AS	Magnetic auto switch
BR	Bar code reader
BZ	Audible alarm (buzzer)

Table 4.1 Error Code Definitions *(Continued)*

Code	Definition
DM	DC motor
LP	Lamp (keypad and warning light)
LS	Mechanical limit switch
PM	Pulse/stepper motor
SL	Pneumatic solenoid
SN	Sensor
SW	Keypad switch

Unit Error Code Categories

- The Error Code is a *three-digit* number. The keypad on the error unit shows the 1_digit segment. The first digit represents the error category. Refer to Table 4.2.
- Press the **FUNCTION -** button on the keypad and the last *two* digits appear. These digits refer to the component (for example, solenoid or sensor) causing the error.

  Example:
  If the Error Code is 1_04, then this represents Sensor Error 04 (SN04). The sensor for the Generic/IDC and DxI Connection indicates that a sample tube carrier did not reach SN04. Refer to Table 4.5, Generic/IDC Connection Track Module on page 4-9 and sensor diagram Figure 4.6, Generic/IDC Connection Module (Track Unit) on page 4-17 in this chapter.

- Press the **FUNCTION +** and **FUNCTION -** button alternately to toggle back and forth to see both sets of digits.

Table 4.2 Unit Error Code Categories

Category	Error Description	Problem	Solution
0_xx	Could not read bar code.	Invalid bar code.	• Attach valid bar code. • Check that the bar code label is correct and clean.
		Sample information was not received from LIS.	• Valid communication needed.
		Sample is not at the correct position.	
1_xx	Cannot pass carrier to sensor SNxx. Can also refer to ASxx.		• Check the sensor position and look for possible jamming.
		At Startup sample tube carrier was located in the sensor.	• Check that carrier is separated from the sensor at Startup.

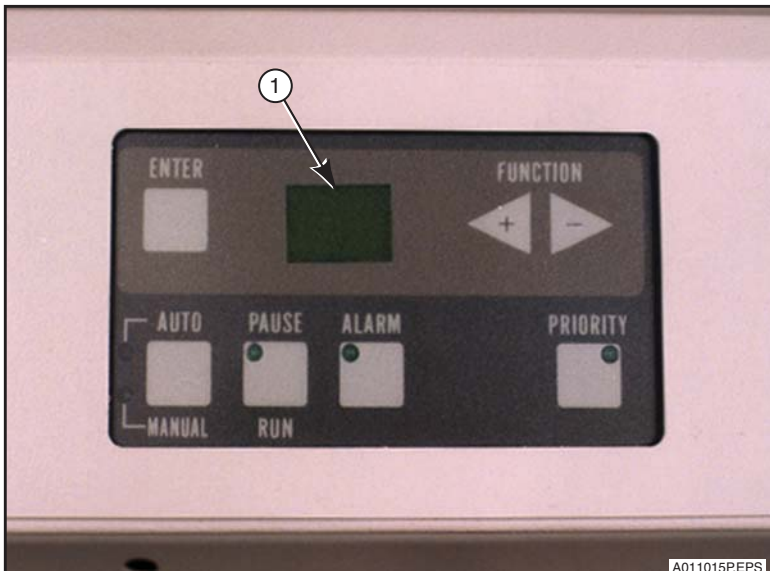
Table 4.2 Unit Error Code Categories *(Continued)*

Category	Error Description	Problem	Solution
2_xx	Cannot move cylinder.		• Check the solenoid/cylinder position and look for possible jamming.
3_xx	Bar code reader not working or label not facing bar code reader.		• Check that the bar code reader light comes on and that the carrier rotates.
4_xx	Pulse Motor/AC Motor Error.		• Check motors and drive belts.
5_xx	Analyzer is not ready, or the tube has stopped somewhere.		• Confirm that the Analyzer is Ready or whether the cassette is jammed between Analyzer and Connection Unit.
7_xx	Auto sensor error (ASxx).		• Confirm that the sensor position and cylinder work correctly.
9_xx	AC motors on arm.		• Confirm that the AM1 and AM2 work correctly.

Generic/IDC and DxI Modules Error Codes

Table 4.3 lists error codes as they appear in the Line Control Computer Systems Error Log and the Generic/IDC Connection Module keypad display (refer to Figure 4.1) when a Generic/IDC Connection Instrument is connected to the system. A brief description of the problem and a possible solution are also found in the table.

Figure 4.1 Generic/IDC Connection Module Keypad



1. Display

Table 4.3 Generic/IDC Connection Module

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_21	Read error at Bar Code Reader 02. The bar code reader could not read a bar code.	1. Check the sample tube to see if the bar code label is readable. 2. Clean the bar code reader window with laboratory lens cleaner. 3. Press **PAUSE**/**RUN** to continue processing.
BUZZ CMD	0_31	Read error at Bar Code Reader 03. The bar code reader could not read a bar code.	1. Check the sample tube to see if the bar code label is readable. 2. Clean the bar code reader window with laboratory lens cleaner. 3. Press **PAUSE**/**RUN** to continue processing.
SN22 PAS	1_22	A sample carrier on the track could not move to SN22 before Bar Code Reader 02.	1. If a sample carrier stops on the track before SN22, push sample carrier to move it forward. 2. Make sure that the sample carrier moves to Bar Code Reader 03. 3. Make sure that SN22 LED lights when the sample carrier moves past it.

Table 4.3 Generic/IDC Connection Module *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN24 PAS	1_24	A sample carrier on the track could not move to SN24 before Bar Code Reader 02.	**1.** If a sample carrier stops on the track before SN24, push sample carrier to move it forward. **2.** Make sure that the sample carrier moves to Bar Code Reader 02. **3.** Make sure that SN24 LED lights when the sample carrier moves past it.
SN32 PAS	1_32	A sample carrier on the track could not move to SN32.	**1.** If a sample carrier stops on the track before SN32, push sample carrier to move it forward. **2.** Make sure that the sample carrier moves to Bar Code Reader 02. **3.** Make sure that SN32 LED lights when the sample carrier moves past it.
SN33 PAS	1_33	A sample carrier on the track could not move to SN33 after Bar Code Reader 02.	**1.** If a sample carrier stops on the track before SN33, push sample carrier to move it forward. **2.** Make sure that the sample carrier moves to SN33. **3.** Make sure that SN33 LED lights when the sample carrier moves past it.
SL11 ON	2_11	SL11 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL11 OFF	2_11	SL11 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL12 ON	2_12	SL12 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL12 OFF	2_12	SL12 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL21 ON	2_21	SL21 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL21 OFF	2_21	SL21 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL22 ON	2_22	SL22 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL22 OFF	2_22	SL22 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL23 ON	2_23	SL23 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL23 OFF	2_23	SL23 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL31 ON	2_31	SL31 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL31 OFF	2_31	SL31 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.

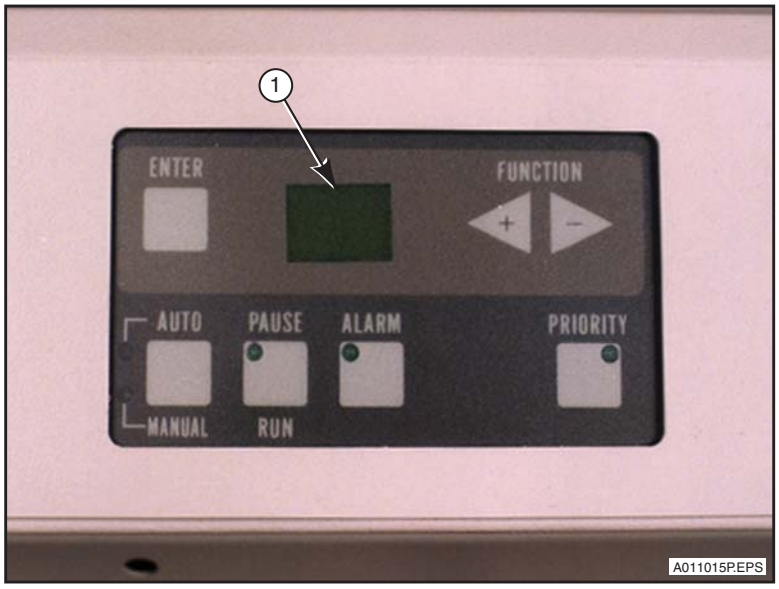
Table 4.3 Generic/IDC Connection Module *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL32 ON	2_32	SL32 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL32 OFF	2_32	SL32 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL33 ON	2_33	SL33 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL33 OFF	2_33	SL33 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL34 ON	2_34	SL34 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL34 OFF	2_34	SL34 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL35 ON	2_35	SL35 for the sample tube gripper is open.	Make sure that the sample tube gripper is closed.
SL35 OFF	2_35	SL35 for the sample tube gripper is not open.	Make sure that the sample tube gripper is open.
SL41 ON	2_41	SL41 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL41 OFF	2_41	SL41 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
SL42 ON	2_42	SL42 for the pass-through stopper is not extended.	If a sample carrier cannot move past the stopper, gently push carrier to move it forward.
SL42 OFF	2_42	SL42 for the pass-through stopper is not retracted.	Make sure that the stopper is down so that the sample carrier can move past it.
BR02 INI	3_02	Initialization error at Bar Code Reader 02.	Power the system OFF/ON. If error occurs again, contact a Beckman Coulter Representative.
BR03 INI	3_03	Initialization error at Bar Code Reader 03.	Power the system OFF/ON. If error occurs again, contact a Beckman Coulter Representative.
DXI-1	5_01	Unexpected response was received to ADD Tube Command.	Press the keypad to stop the alarm and continue processing.
DXI-2	5_02	Unexpected response was received to ADD Tube Command.	Press the keypad to stop the alarm and continue processing.
DXI-3	5_03	Message was not sent correctly.	**1.** Check the DxI Event Log and clear the error. **2.** Press **PAUSE/RUN** to continue processing.
DXI-4	5_04	Failure in resetting message queue (performing Function 84).	**1.** Repeat Function 84. **2.** Press **PAUSE/RUN** to continue processing.
DXI-5	5_05	Time out for receiving response occurred.	**1.** Check the DxI Event Log and clear the error. **2.** Press **PAUSE/RUN** to continue processing.

Centaur Module Error Codes

Table 4.4 lists error codes as they appear in the Line Control Computer Systems Error Log and the Generic Connection Module keypad display (refer to Figure 4.2) when a Centaur instrument is connected to the system. Use this table and the Generic Connection Sensor Diagrams on page 4-17 to resolve error conditions on the Centaur Generic Connection Module. A brief description of the problem and a possible solution are found in the table below.

Figure 4.2 Generic Connection Module Keypad



1. Display

Table 4.4 Centaur Module Error Codes

Sensor	Keypad Display	Problem	Solution
ANA RST	5_01 or 9_01	Communication error between the Connection Module and Centaur. No response received from the Centaur.	• Check the communication cable. • Verify the Centaur is turned on. • Press the **PAUSE**/**RUN** button. • If error returns, contact Beckman Coulter Service.
ANA ADD	5_02 or 9_02	Sample ID was sent by the Connection Module to the Centaur but no response was received from the Centaur.	• Clear the error at the Centaur. • Press **PAUSE**/**RUN** at the Connection Module to continue sample processing. • Samples in the sorting area will be removed without sample aspiration. Rerun these samples.
ANA IDX	5_03 or 9_03	Connection Module did not receive message from Centaur that pipetting is complete for sample tube at the aspiration position.	• Clear the error at the Centaur. • Press **PAUSE**/**RUN** at the Connection Module to continue sample processing. • Process sample tube released from the aspiration position as a Rerun.

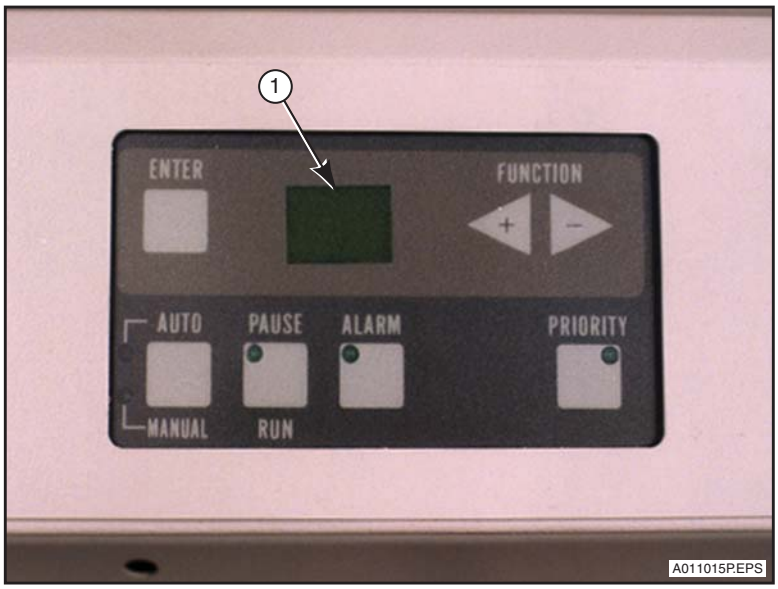
Table 4.4 Centaur Module Error Codes

Sensor	Keypad Display	Problem	Solution
ANA SID	5_04 or 9_04	A sample tube previously registered by the Centaur arrived at the sampling pipetting position but no acceptance response was received from the Centaur.	• Clear the error at the Centaur. • Press **PAUSE/RUN** at the Connection Module to continue sample processing. • Process sample tube released from the aspiration position as a Rerun.
ANA WAT1	5_05 or 9_05	No response from the Centaur. Samples are stopped at the Bar Code Reader.	• Check the communication cable. • Verify the Centaur is turned on. • Press the **PAUSE/RUN** button and continue processing. • If error returns, contact Beckman Coulter Service.
ANA WAT2	5_06 or 9_06	Sample tube registration by the Centaur is not complete. Sample tube moving to the sorting area is held at the Bar Code Reader.	• Check the communication cable. • Verify the Centaur is turned on. • Press the **PAUSE/RUN** button and continue processing. • If error returns, contact Beckman Coulter Service.

Generic/IDC (CLSI) Connection Track Module Error Codes

Table 4.5 lists error codes as they appear in the Line Control Computer Systems Error Log and the Generic/IDC Connection Track Module keypad display (refer to Figure 4.3). A brief description of the problem and a possible solution are also found in the table.

Figure 4.3 Generic/IDC Connection Track Module Keypad



1. Display

Table 4.5 Generic/IDC Connection Track Module

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_11	Read error at Bar Code Reader 01.	**1.** Check the sample to see if the bar code label is readable. **2.** Clean the bar code reader with laboratory lens cleaner if necessary. **3.** Press **PAUSE**/**RUN** to continue processing.
SN02 PAS	1_02	A sample carrier on the track could not move to SN02 before Bar Code Reader 01.	**1.** If a sample carrier stops on the track before the BCR01, gently push carrier to move it forward. **2.** Make sure that the sample carrier moves to Bar Code Reader 01. **3.** Make sure that SN02 LED lights when the sample carrier moves past it.
SN04 PAS	1_04	A sample carrier passed Bar Code Reader 01 and did not pass SN04.	**1.** If a sample carrier stops on the track after BCR01, gently push carrier to move it forward. **2.** Make sure that the sample carrier moves to SN04. **3.** Make sure that SN04 LED lights when the sample carrier moves past it.
SN05 PAS	1_05	A sample carrier passed Bar Code Reader 01 and did not pass SN05.	**1.** If a sample carrier stops on the track after BCR01, gently push carrier to move it forward. **2.** Make sure that the sample carrier moves to SN05. **3.** Make sure that SN05 LED lights when the sample carrier moves past it.
SN43 PAS	1_43	A sample carrier passed SN42 and did not pass SN43.	**1.** If a sample carrier stops on the track after BCR01 or stops where the main lane and connector intersect, gently push carrier to move it forward. **2.** Make sure that the sample carrier moves to SN43. **3.** Make sure that SN43 LED lights when the sample carrier moves past it.
SL01 ON	2_01	SL01 for the pass-through stopper #1 on Bar Code Reader 01 is not extended.	If a sample carrier will not move past the stopper, gently push carrier to move it forward.
SL01 OFF	2_01	SL01 for the pass-through stopper #1 on Bar Code Reader 01 is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL02 ON	2_02	SL02 for the pass-through stopper #2 on Bar Code Reader 01 is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL02 OFF	2_02	SL02 for the pass-through stopper #2 on Bar Code Reader 01 is not extended.	If a sample carrier will not move past the stopper, gently push carrier to move it forward.

Table 4.5 Generic/IDC Connection Track Module *(Continued)*

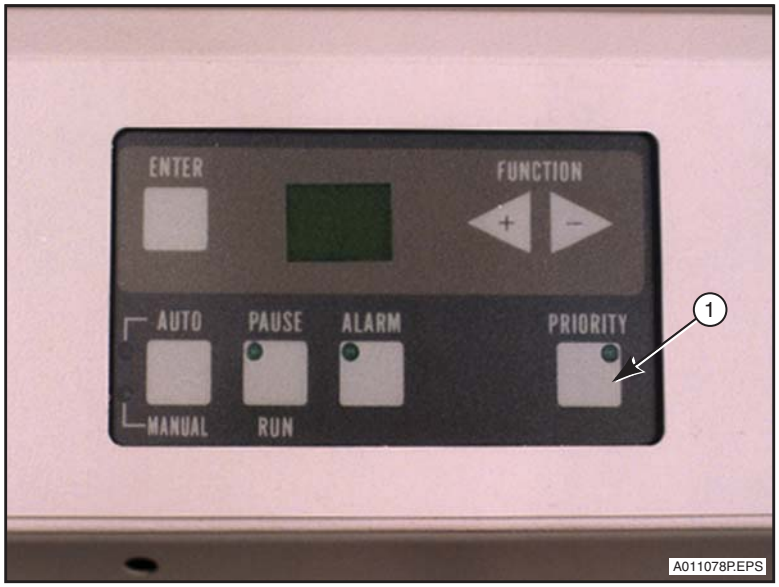
Sensor	Keypad Display	Problem	Solution
SL03 ON	2_03	SL03 for the stopper on the BCR01 is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL03 OFF	2_03	SL03 for the stopper on the BCR01 is not extended.	If a sample carrier will not move past the stopper, gently push carrier to move it forward.
SL04 ON	2_04	SL04 on the divider for the sample carrier diverter is not extended.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
SL04 OFF	2_04	SL04 on the divider is not retracted.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
SL41 ON	2_41	SL41 for the pass-through stopper is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL41 OFF	2_41	SL41 for the pass-through stopper is not extended.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
SL42 ON	2_42	SL42 for the pass-through stopper is not extended.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
SL42 OFF	2_42	SL42 for the pass-through stopper is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL43 ON	2_43	SL43 for the pass-through stopper is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL43 OFF	2_43	SL43 for the pass-through stopper is not extended.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
SL44 ON	2_44	SL44 for the pass-through stopper is not extended.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
SL44 OFF	2_44	SL44 for the pass-through stopper is not retracted.	Make sure the stopper is down so that the sample carrier can move past it.
SL45 ON	2_45	SL45 for the pass-through stopper is not extended.	Make sure the stopper is down so that the sample carrier can move past it.
SL45 OFF	2_45	SL45 for the pass-through stopper is not retracted.	If a sample carrier will not move past the diverter, gently push carrier to move it forward.
BR01 INI	3_01	Bar Code initialization or reader failure error.	Press **PAUSE**/**RUN** to continue sample processing. If the error repeats or if there is no sample tube at the bar code reader, reset the module by switching to **MANUAL** mode, then to **AUTO** mode. If the error occurs again, contact a Beckman Coulter Representative.

L and H-Lane Error Codes

The H-Lane enables Stockyard retrieved sample tubes on the Return Lane to route back to the Through Lane for additional testing on connected instruments. The H-lane is located before the first connected instrument on the track.

Table 4.6 lists error codes as they appear in the Line Control Computer Systems Error Log and on the LX/DxC Connection Module keypad display (refer to Figure 4.4). A brief description of the problem and a possible solution are also found in the table.

Figure 4.4 LX/DxC Connection Module Keypad



1. Display

Table 4.6 L and H-Lane Error Codes

Sensor	Keypad display	Problem	Solution
SN41 PAS SN05	1_41 1_05	This error indicates that a sample is not routed correctly after passing the sensor (SN40) and the sample does not reach the sensor (SN41) on the main lane of H Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN41 PAS SN05	1_41 1_05	This error indicates that a sample is not routed correctly from the return lane to the main lane and the sample does not reach the sensor (SN41) on the main lane of H Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN44 PAS SN03	1_44 1_03	This error indicates that a sample is not routed correctly after passing the sensor (SN43) and the sample does not reach the sensor (SN44) on the return lane of H Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.

Table 4.6 L and H-Lane Error Codes *(Continued)*

Sensor	Keypad display	Problem	Solution
SN46 PAS	1_46	This error indicates that a sample is not routed correctly after passing the sensor (SN45) and the sample does not reach the sensor (SN46) on the return lane of H Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN48 PAS	1_48	This error indicates that a sample is not routed correctly after passing the sensor (SN47) and the sample does not reach the sensor (SN48) on the return lane of L Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN50 PAS	1_50	This error indicates that a sample is not routed correctly after passing the sensor (SN49) and the sample does not reach the sensor (SN50) on the return lane of L Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN55 PAS	1_55	This error indicates that a sample is not routed correctly after passing the sensor (SN54) and the sample does not reach the sensor (SN55) on the return lane of L Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN57 PAS	1_57	This error indicates that a sample is not routed correctly after passing the sensor (SN56) and the sample does not reach the sensor (SN57) on the return lane of L Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN59 PAS	1_59	This error indicates that a sample is not routed correctly after passing the sensor (SN58) and the sample does not reach the sensor (SN59) on the return lane of L Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SN61 PAS	1_61	This error indicates that a sample is not routed correctly after passing the sensor (SN60) and the sample does not reach the sensor (SN61) on the return lane of L Lane.	Make sure that a sample tube carrier is not jammed and that the belt moves.
SL40 SL05	2_40 2_05	Stopper error at sensor (SL40) on the through lane of H Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL40)
SL41 SL06	2_41 2_06	Stopper error at sensor (SL41) on the through lane of H Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL41)
SL42 ON SL04	2_42 2_04	An error occurred at the diverter (SL42) on the through lane of H Lane.	Make sure that the diverter is engaged and visible over the track. (Check SL42)
SL42 OFF SL04	2_42 2_04	An error occurred at the diverter (SL42) on the through lane of H Lane.	Make sure the diverter is disengaged and not visible over the track. (Check SL43)
SL43 SL01	2_43 2_01	Stopper error at sensor (SL43) on the return lane side of H Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL44)
SL44 SL02	2_44 2_02	Stopper error at sensor (SL44) on the return lane side of H Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL44)

Table 4.6 L and H-Lane Error Codes *(Continued)*

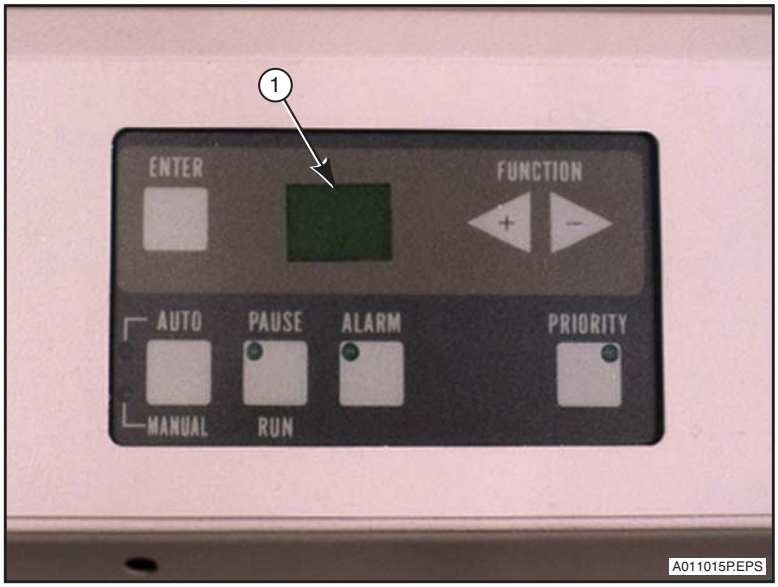
Sensor	Keypad display	Problem	Solution
SL45 ON SL03	2_45 2_03	An error occurred at the diverter (SL45) on the return lane side of H Lane.	Make sure that the diverter works correctly on the conveyor. (Check SL46)
SL45 OFF SL03	2_45 2_03	An error occurred at the diverter (SL45) on the return lane side of H Lane.	Make sure that the diverter has returned to the Home position. (Check SL47)
SL46	2_46	Stopper error at sensor (SL46) on the return lane side of H Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL48)
SL47	2_47	Stopper error at sensor (SL47) on the return lane side of H Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL49)
SL48	2_48	Stopper error at sensor (SL48) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL50)
SL49	2_49	Stopper error at sensor (SL49) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL51)
SL50	2_50	Stopper error at sensor (SL50) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL52)
SL51	2_51	Stopper error at sensor (SL51) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL53)
SL55	2_55	Stopper error at sensor (SL55) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL58)
SL56	2_56	Stopper error at sensor (SL56) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL59)
SL57	2_57	Stopper error at sensor (SL57) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL60)
SL58	2_58	Stopper error at sensor (SL58) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL61)
SL59	2_59	Stopper error at sensor (SL59) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL62)
SL60	2_60	Stopper error at sensor (SL60) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL63)
SL61	2_61	Stopper error at sensor (SL61) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL64)
SL62	2_62	Stopper error at sensor (SL62) on the return lane side of L Lane.	Make sure that a sample tube carrier is not jammed at the stopper. (Check SL65)

Smart H-Lane Error Codes

The H-Lane (non-smart and smart) enables Stockyard retrieved sample tubes on the “Return Lane” to route back to the “Through Lane” for additional testing on connected instruments. The H-lane is located before the first connected instrument on the track. The Smart H-Lane has a keypad display to display H-Lane specific errors.

Table 4.7 lists error codes as they appear in the Line Control Computer Systems Error Log and on the Smart H-Lane keypad display. Refer to Figure 4.5.

Figure 4.5 Smart H-Lane Module Keypad



1. Display

A brief description of the problem and a possible solution are also found in the table.

Table 4.7 Smart H-Lane Error Codes

Sensor	Keypad display	Problem	Solution
SN03 PAS	1_03	Sample tube carrier was not detected between SN01 and SN03.	Make sure that a sample tube carrier is not jammed.
SN05 PAS	1_05	A sample tube carrier was not detected from the H-Lane Return Lane to the main track lane.	Make sure that a sample tube carrier is not jammed.
SN05 PAS	1_05	A sample tube carrier was not detected between SN04 and SN05 on the Return Lane of the H-lane.	Make sure that a sample tube carrier is not jammed
SN48 PAS	1_48	A sample tube carrier was not detected between SN47 and SN49 on the Return Lane of the L-lane.	Make sure that a sample tube carrier is not jammed.

Table 4.7 Smart H-Lane Error Codes *(Continued)*

Sensor	Keypad display	Problem	Solution
SN50 PAS	1_50	A sample tube carrier was not detected between SN49 and SN50 on the Return Lane of the L-lane.	Make sure that a sample tube carrier is not jammed.
SN55 PAS	1_55	A sample tube carrier was not detected between SN54 and SN55 on the Return Lane of the L-lane.	Make sure that a sample tube carrier is not jammed.
SN57 PAS	1_57	A sample tube carrier was not detected between SN56 and SN57 on the Return Lane of the L-lane.	Make sure that a sample tube carrier is not jammed.
SN59 PAS	1_59	A sample tube carrier was not detected between SN58 and SN59 on the Return Lane of the L-lane.	Make sure that a sample tube carrier is not jammed.
SL01	2_01	Stopper error at sensor (SL43)on the Return Lane of the H-Lane.	Make sure that a sample tube carrier is not jammed at the stopper (AS01).
SL02	2_02	Stopper error at sensor (SL44)on the Return Lane of the H-Lane.	Make sure that a sample tube carrier is not jammed at the stopper (AS02).
SL03	2_03	An error occurred at the merging lanes after the sample tube carrier is sorted.	Make sure that the diverter works correctly, has returned to the Home position. Check AS04 and AS08.
SL05	2_05	Stopper error at the sample tube carrier merging.	Make sure that a sample tube carrier is not jammed at the stopper (AS05).
SL06	2_06	Stopper error at the sample tube carrier merging.	Make sure that a sample tube carrier is not jammed at the stopper (AS06).
SL48	2_48	Stopper error at the empty sample tube carrier Return I-Lane #1.	Make sure that a sample tube carrier is not jammed at the stopper (AS50).
SL49	2_49	Stopper error at the empty sample tube carrier Return I-Lane #1.	Make sure that a sample tube carrier is not jammed at the stopper (AS51).
SL50	2_50	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS52).
SL51	2_51	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS53).
SL55	2_55	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS58).
SL56	2_56	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS59).
SL57	2_57	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS60).
SL58	2_58	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS61).

Table 4.7 Smart H-Lane Error Codes *(Continued)*

Sensor	Keypad display	Problem	Solution
SL59	2_59	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS62).
SL60	2_60	Stopper error at the empty sample tube carrier Return I-Lane #2.	Make sure that a sample tube carrier is not jammed at the stopper (AS63).

Sensor Diagrams

Sensor diagrams are provided to assist the operator in locating errors on the system, and are intended to supplement the error code tables.

Background Information

Each hardware module uses a series of magnetic, fiber optic and other sensors to detect sample tube carriers, sample tubes in sample tube carriers, hardware positioning, and whether or not a gripper has grasped a tube.

When a sensor detects a problem on the system, an audible alarm and flashing beacon activate on the module where the error occurred. The operator should first identify the hardware module where the error has occurred and then look up the error code in the error code tables in this document.

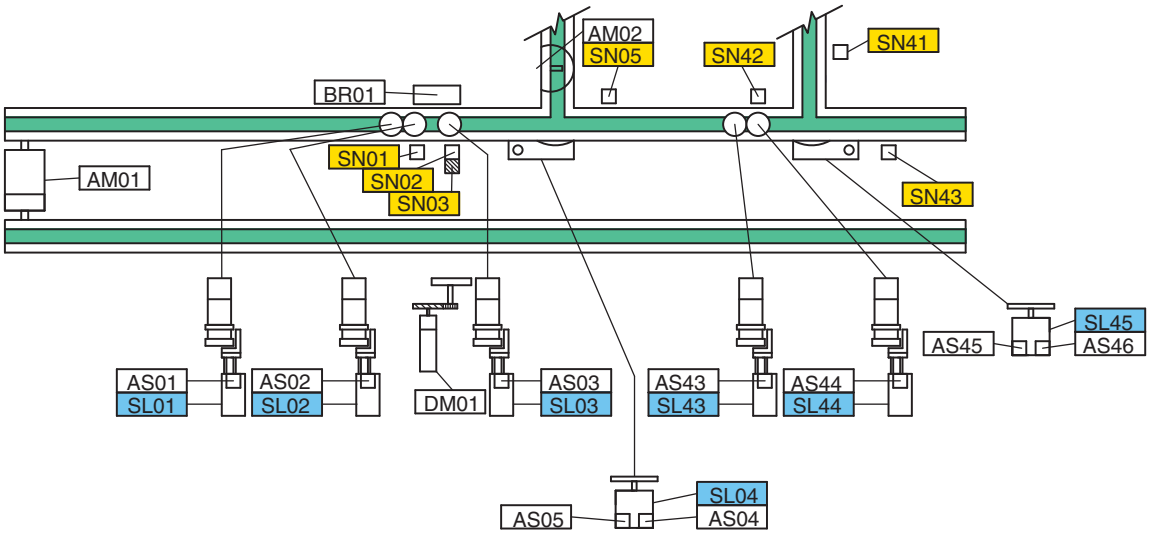
The most common errors tend to be stuck sample tube carriers which may happen anywhere along the track.

Generic/IDC (CLSI) Connection Module

Figure 4.6 Generic/IDC Connection Module (Track Unit)

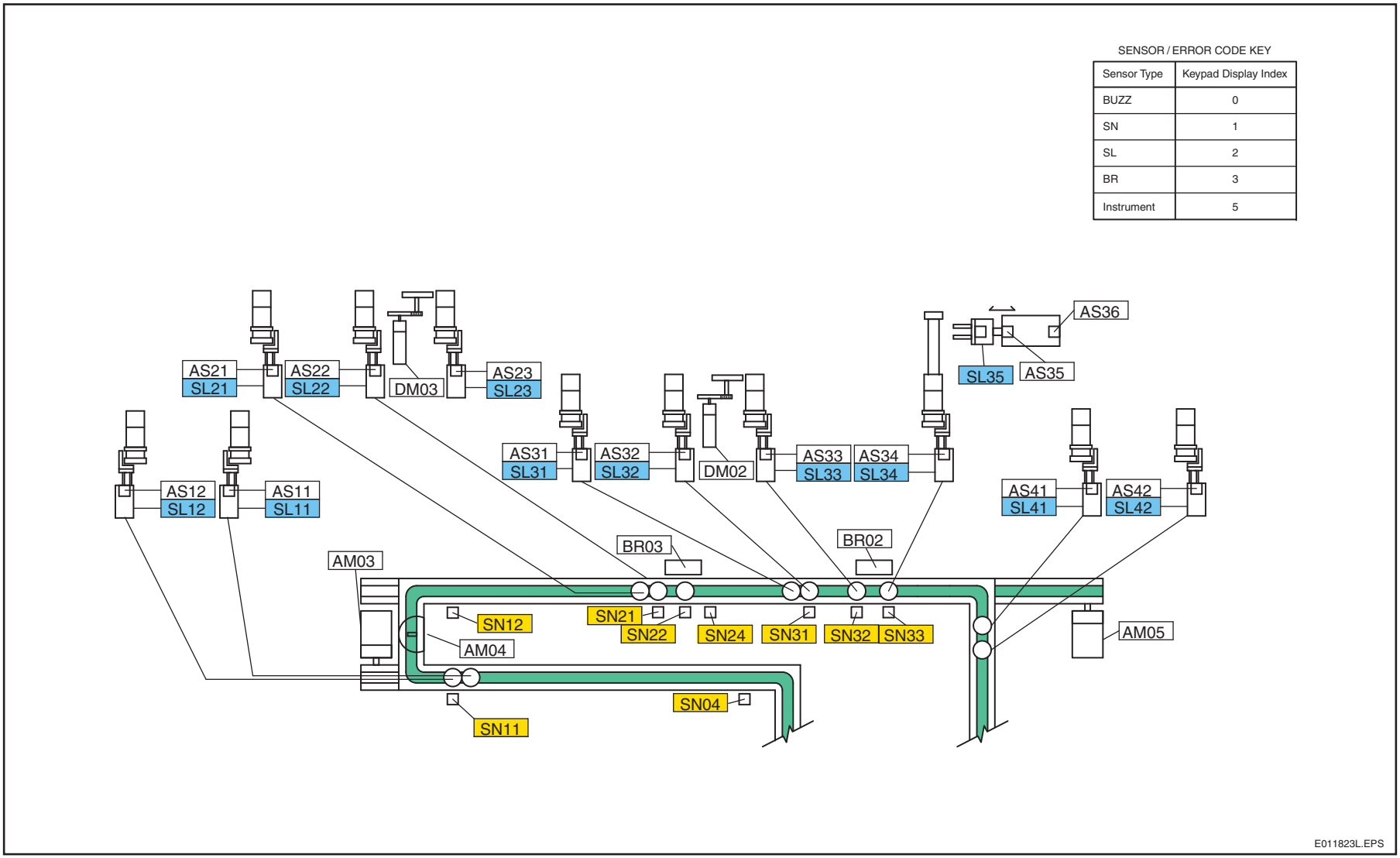
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Index
BUZZ	0
SN	1
SL	2
BR	3



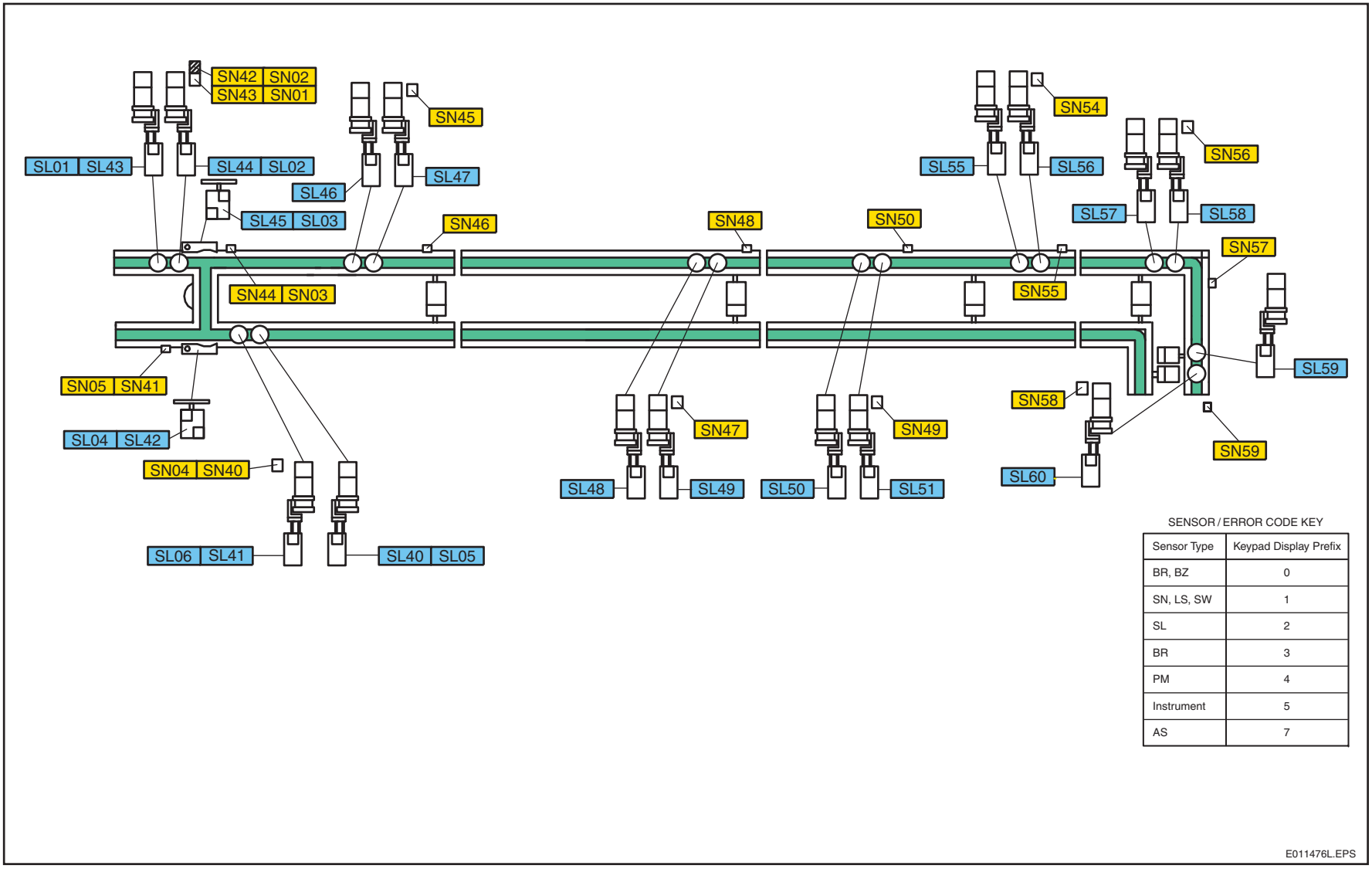
E011822L.EPS

Figure 4.7 Generic/IDC Connection Module (Connection Unit)



L and H Lane

Figure 4.8 L and H Lane



SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
BR, BZ	0
SN, LS, SW	1
SL	2
BR	3
PM	4
Instrument	5
AS	7

Related Documents

Power Processor *General System Operation IFU*,
PN B01683

www.beckmancoulter.com