



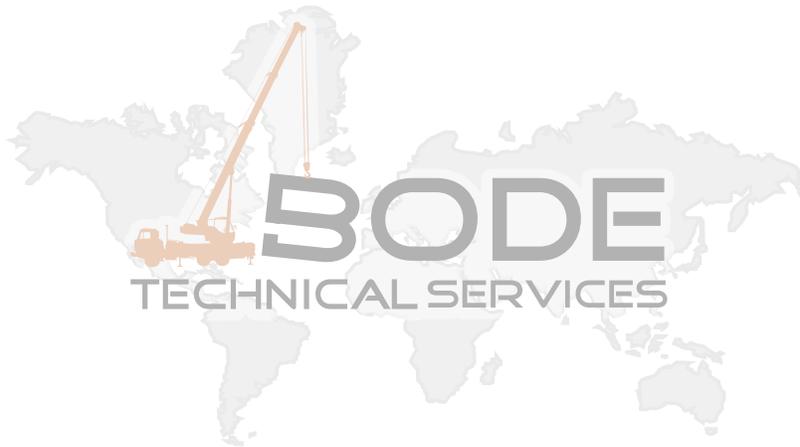
# **PAT** **CONSOLE UPGRADE KIT**

**iFLEX5 / EXPERT CONSOLE**  
for Lattice Boom Cranes

 **BODE**  
TECHNICAL SERVICES



**INSTALLATION / CALIBRATION MANUAL**



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**MANUAL REVISIONS**

REV	DATE	NAME	DESCRIPTION
-	07/03/08	SC	ECN 08-101, Creation of Installation/Calibration Manual

## TABLE OF CONTENTS

1	GENERAL INFORMATION .....	1
2	WARNINGS.....	1
3	SYSTEM DESCRIPTION .....	2
4	CENTRAL UNIT INSTALLATION .....	3
5	JUNCTION BOX INSTALLATION .....	4
6	CONSOLE INSTALLATION.....	5
6.1	LIGHTBAR CONNECTION .....	6
6.2	PRS40 (WINDSPEED OPTION).....	6
7	DRAWINGS AND SCHEMATICS .....	7
7.1	ELECTRICAL WIRING - LINE RIDER SYSTEM (PAGE 1).....	7
7.2	ELECTRICAL WIRING - LINE RIDER SYSTEM (PAGE 2).....	8
7.3	ELECTRICAL WIRING - LINE RIDER SYSTEM (PAGE 3).....	9
7.4	ELECTRICAL WIRING – LINE RIDER SYSTEM (PAGE 4).....	10
7.5	ELECTRICAL WIRING - LINE RIDER SYSTEM (PAGE 5).....	11
7.6	ELECTRICAL WIRING - LINE RIDER SYSTEM (PAGE 6).....	12
8	Quick calibration reference .....	13
8.1	MAIN LINERIDER.....	14
8.2	AUXILIARY LINERIDER .....	14
8.3	FUNCTION X: CUTOFF TEST .....	15
9	iFLASH .....	15
9.1	iFLASH PC INTRODUCTION .....	15
9.2	SYSTEM PREREQUISITES .....	15
9.3	PROGRAM MENU.....	16
10	CALIBRATION INFORMATION SHEET .....	21

## RECOMMENDED TOOLS

### Installation:

- drill
- screw Drivers
- self-tapping screws
- wrenches

### Calibration:

- laptop
- null modem cable
- iFlash
- level
- tape measure
- known test weights

## 1 GENERAL INFORMATION

The iFlex5 system has been designed to provide the crane operator with the essential information required to operate the machine within its design parameters.

Using different sensing devices, the iFlex5 system monitors various crane functions and provides the operator with a continuous reading of the crane's capacity. The readings continuously change as the crane moves through the motions needed to make the lift.

The iFlex5 system provides the operator with information regarding the angle of the boom, working radius, rated load and the total calculated weight being lifted by the crane.

If non permitted conditions are approached, the iFlex5 will warn the operator by sounding an audible alarm, lighting a warning light and locking out those functions that may aggravate the crane's condition.

Refer to operator's manual 050-650-190-201 for console operating instructions.

## 2 WARNINGS

The Rated Capacity Limiter (RCL) has been designed to provide the crane operator with the essential information required to operate the machine within its design parameters.

Using different sensing devices, the Rated Capacity Limiter monitors various crane functions and provides the operator with a continuous reading of the crane's capacity. The readings continuously change as the crane moves through the motions needed to make the lift.

The RCL provides the operator with information regarding the angle of the boom, working radius, rated load and the total calculated weight being lifted by the crane.

If non permitted conditions are approached, the Rated Capacity Limiter will warn the operator by sounding an audible alarm, lighting a warning light and locking out those functions that may aggravate the crane's condition.

The device is not, and shall not, be a substitute for good operator judgment, experience and use of accepted safe crane operating procedures.

The responsibility for the safe crane operation shall remain with the crane operator who shall ensure that all warnings and instructions supplied are fully understood and observed.

Prior to operating the crane, the operator must carefully and thoroughly read and understand the information in this manual to ensure that he knows the operation and limitations of indicator and crane.

Proper functioning depends upon proper daily inspection and observance of the operating instructions set forth in this manual. Refer to Section *Pre-Operation Inspection and Calibration Verification* of the operator's manual.



### WARNING

**The RCL can only work correctly, if all adjustments have been properly set. For correct adjustment, the operator has to answer thoroughly and correctly all questions asked during the setup procedure in accordance with the real rigging state of the crane. To prevent material damage and serious or even fatal accidents, the correct adjustment of the RCL has to be ensured before starting the crane operation.**



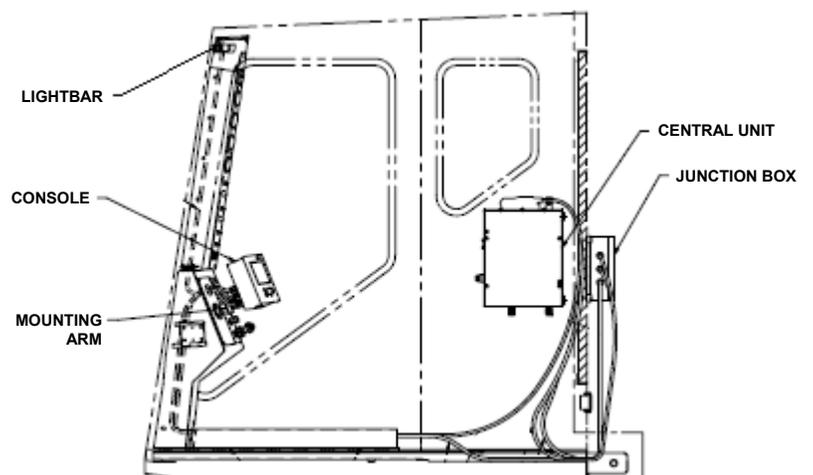
## 4 CENTRAL UNIT INSTALLATION



- Disconnect all cable assemblies from central unit.
- Remove existing central unit from wall of operator's cab. (it may be necessary for an additional person outside the cab to hold the head of the screw tight while loosening the nuts from inside the cab).



- Fasten iFlex5 central unit to wall, using the same mounting hardware from previous installation.
- Ensure the central unit is mounted with the wiring harness connector located on the top of the box and bypass key is easily accessible by the crane operator.
- Firmly attach 70-pin wiring harness to central unit connector.



## 5 JUNCTION BOX INSTALLATION

- Locate best suited position for installation of junction box, ensuring cables from central unit wiring harness and console will adequately reach all adjoining junction box connectors.

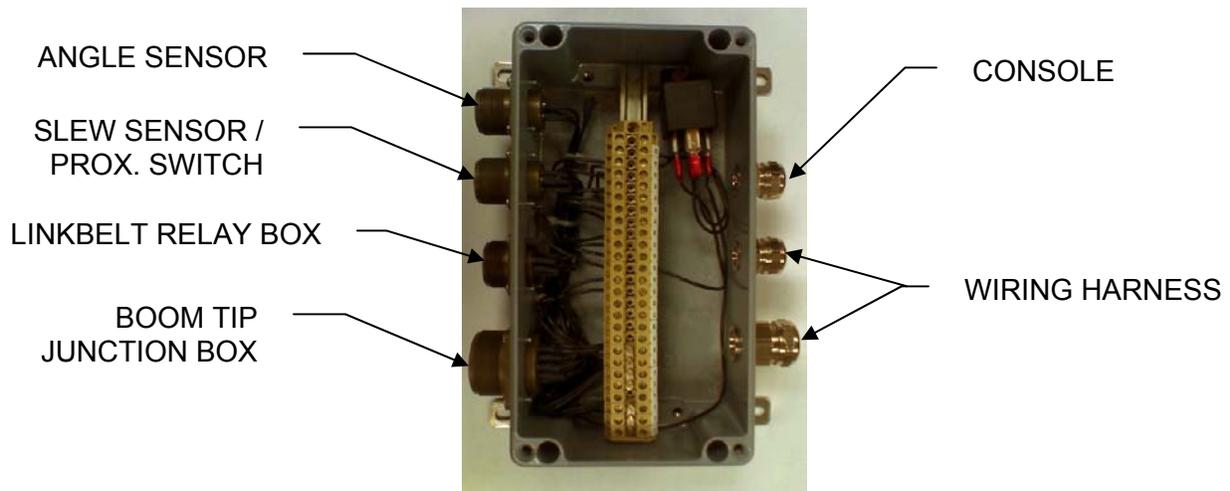


**Figure 1:** Located on outside wall of cab, behind operator.



**Figure 2:** Located on inside wall of cab, behind operator's chair and above the Operators and Parts Manual.

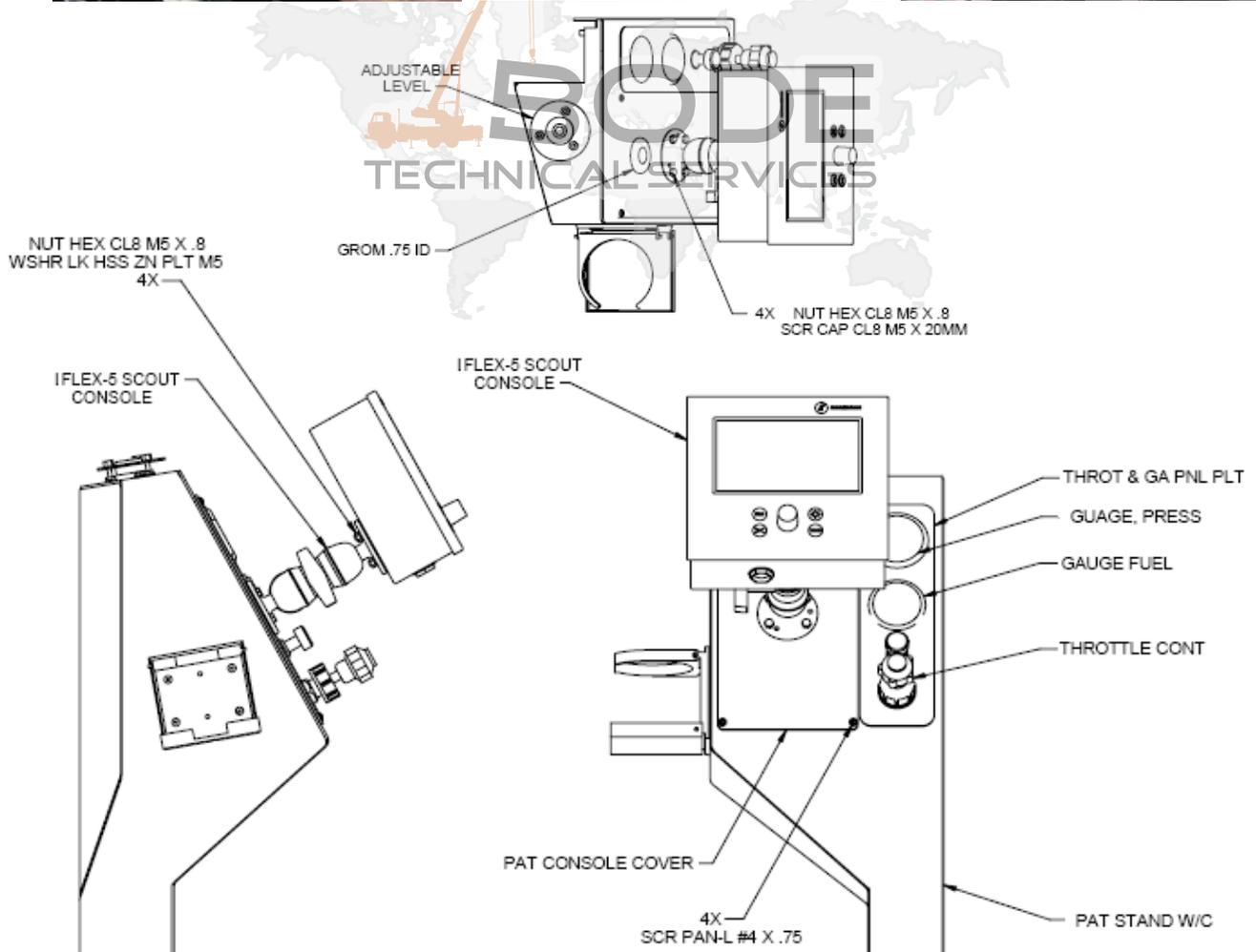
- Securely fasten junction box assembly to wall.
- Route cables previously removed from central unit and connect to junction box.



## 6 CONSOLE INSTALLATION



- Remove existing console and disconnect cables.
- Route newly supplied console cable from junction box assembly to the control panel and through the access hole of console cover (mounting plate).
- Securely connect console power cable to back of console.
- Fasten the console cover (mounting plate) to the control panel.
- Mount console by inserting the console mounting ball into the mounting arm, and tighten securely.



## 6.1 Lightbar Connection



- If the lightbar option is being used, an additional lightbar adapter cable must be purchased. (031-300-060-520)
- Route lightbar cable through access hole of console cover (mounting plate).
- Connect adapter cable between already existing lightbar cable and connection located on back of iScout console.
- Securely fasten the console cover (mounting plate) to the control panel. Plate may be installed with cable access hole towards the top, limiting the length of cable visible on outside of panel.
- Mount console by inserting the console mounting ball into the mounting arm, and tighten securely.



## 6.2 PRS40 (windspeed option)



- If the Windspeed monitor is an option, disconnect the PRS40 wiring (power / antenna) and remove the mounting arm from its' base.
- Remove the base from the plate, and reinstall on the bottom side of the mounting plate.
- Connect previously removed cables.
- Attach the console mounting arm to its' base.
- Rotate the mounting arm of the iScout console to the left, allowing visibility of the crane gauges.

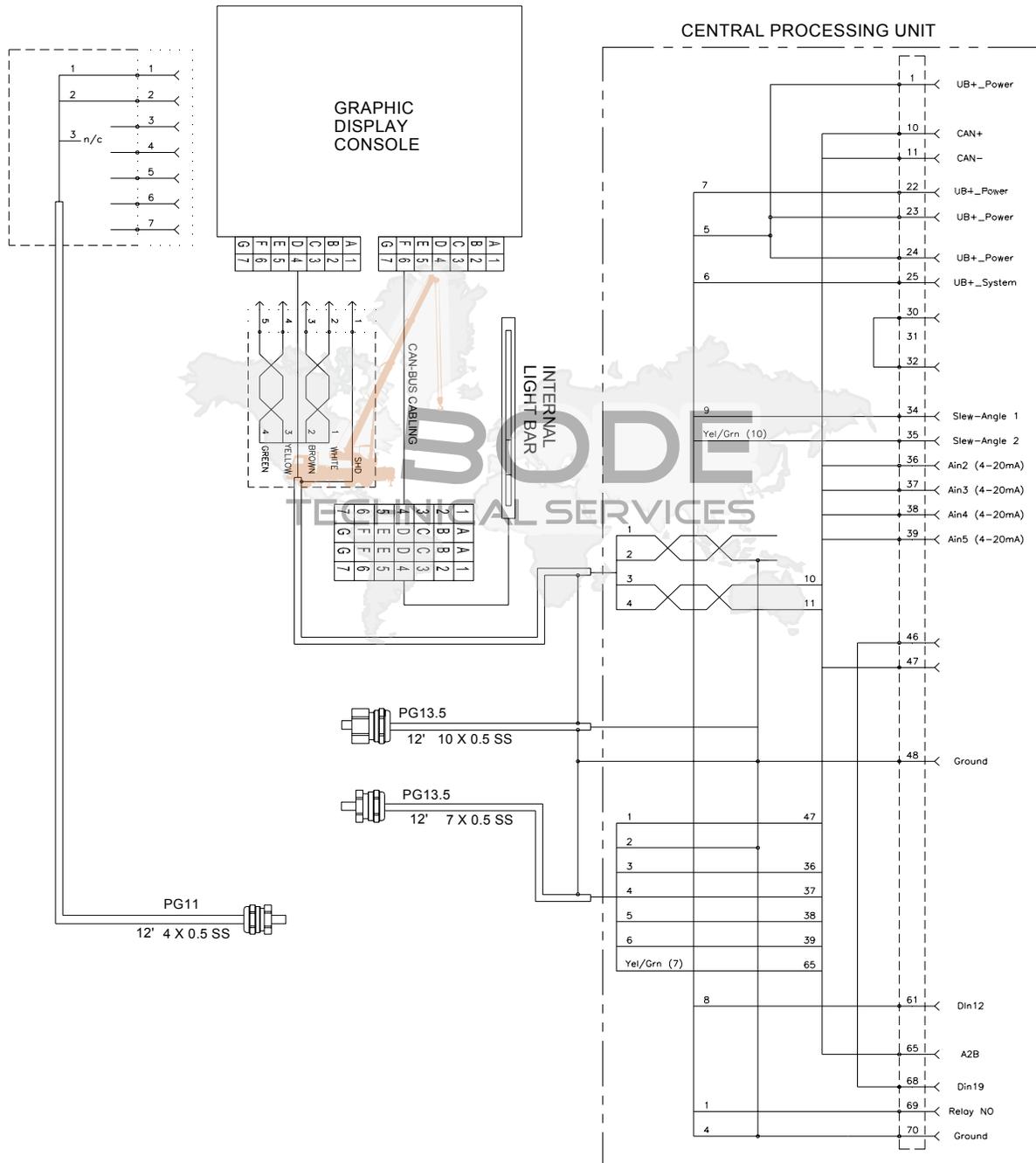


## 7 DRAWINGS AND SCHEMATICS

For reference information, Drawing 1 is the central unit wiring and Drawing 2 is the console and boom wiring. There are 2 different system drawings; slewing sensor 24V, and proximity sensor 12V, each have drawings 1 thru 5.

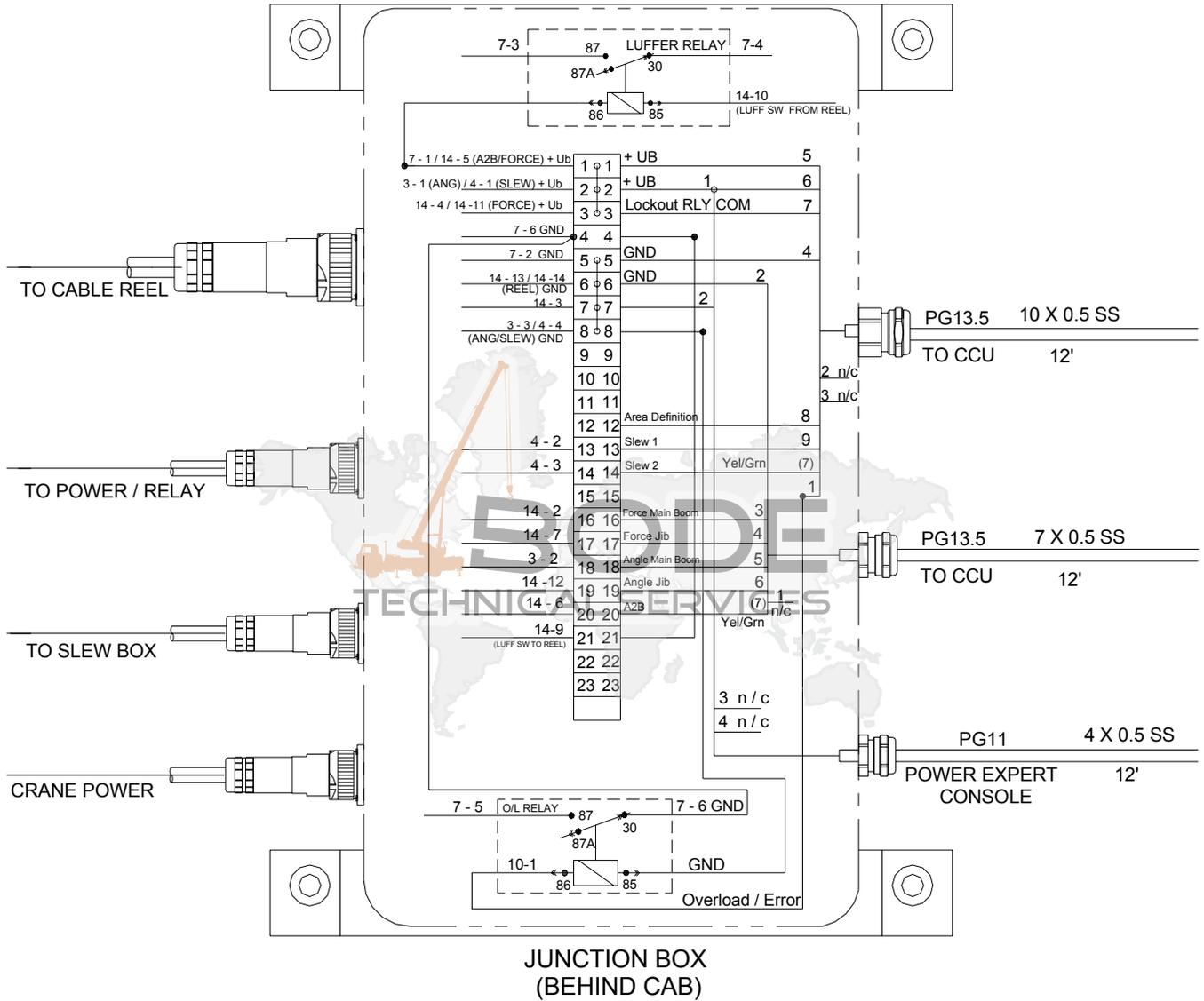
### 7.1 Electrical Wiring - Line Rider System (page 1)

DRAWING 1. Electrical Wiring For iFlex5 Central Unit (+12/24V), console, and lightbar.



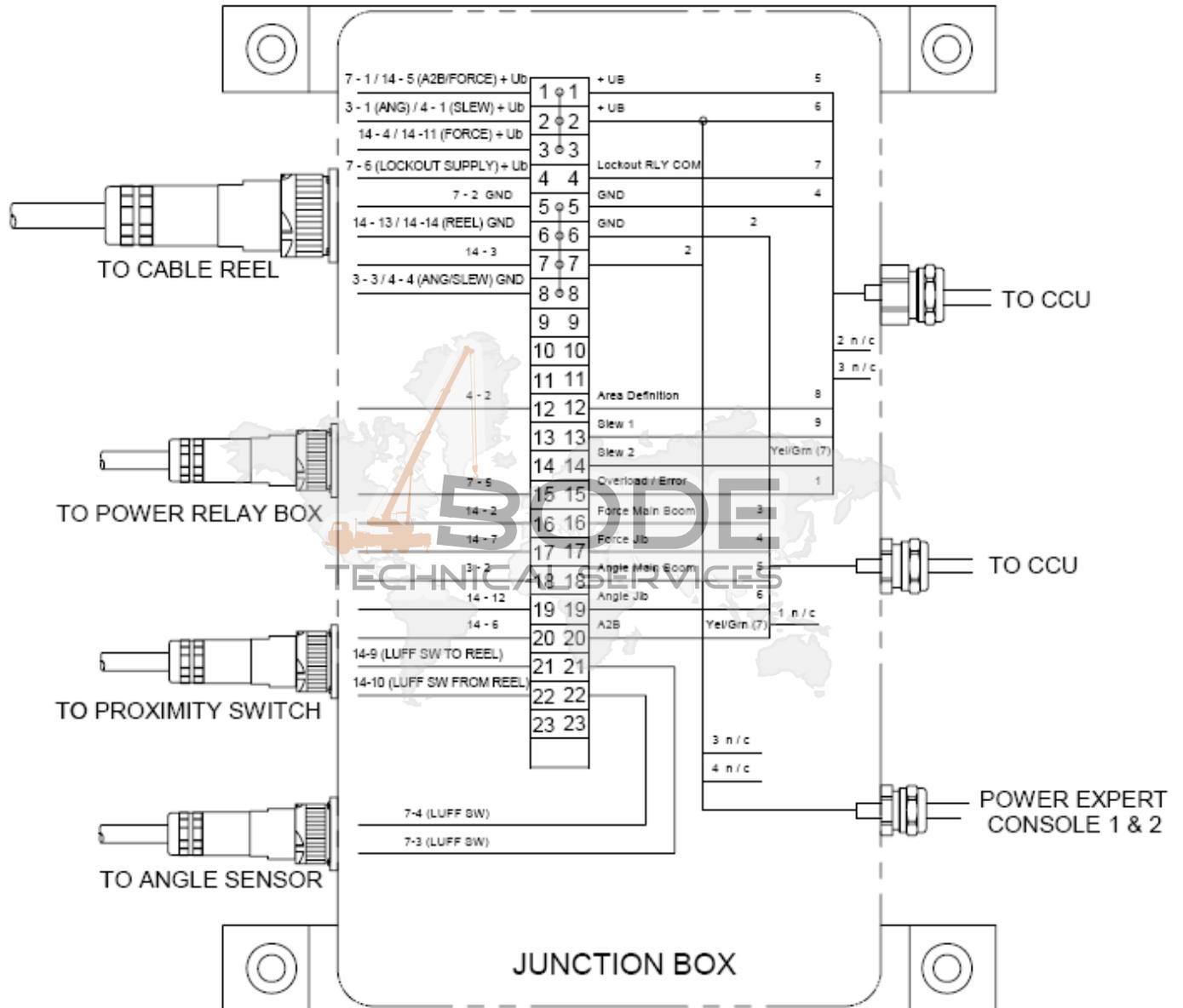
### 7.2 Electrical Wiring - Line Rider System (page 2)

DRAWING 2. Internal Wiring For Central Junction Box Assembly (SLEW OPTION).



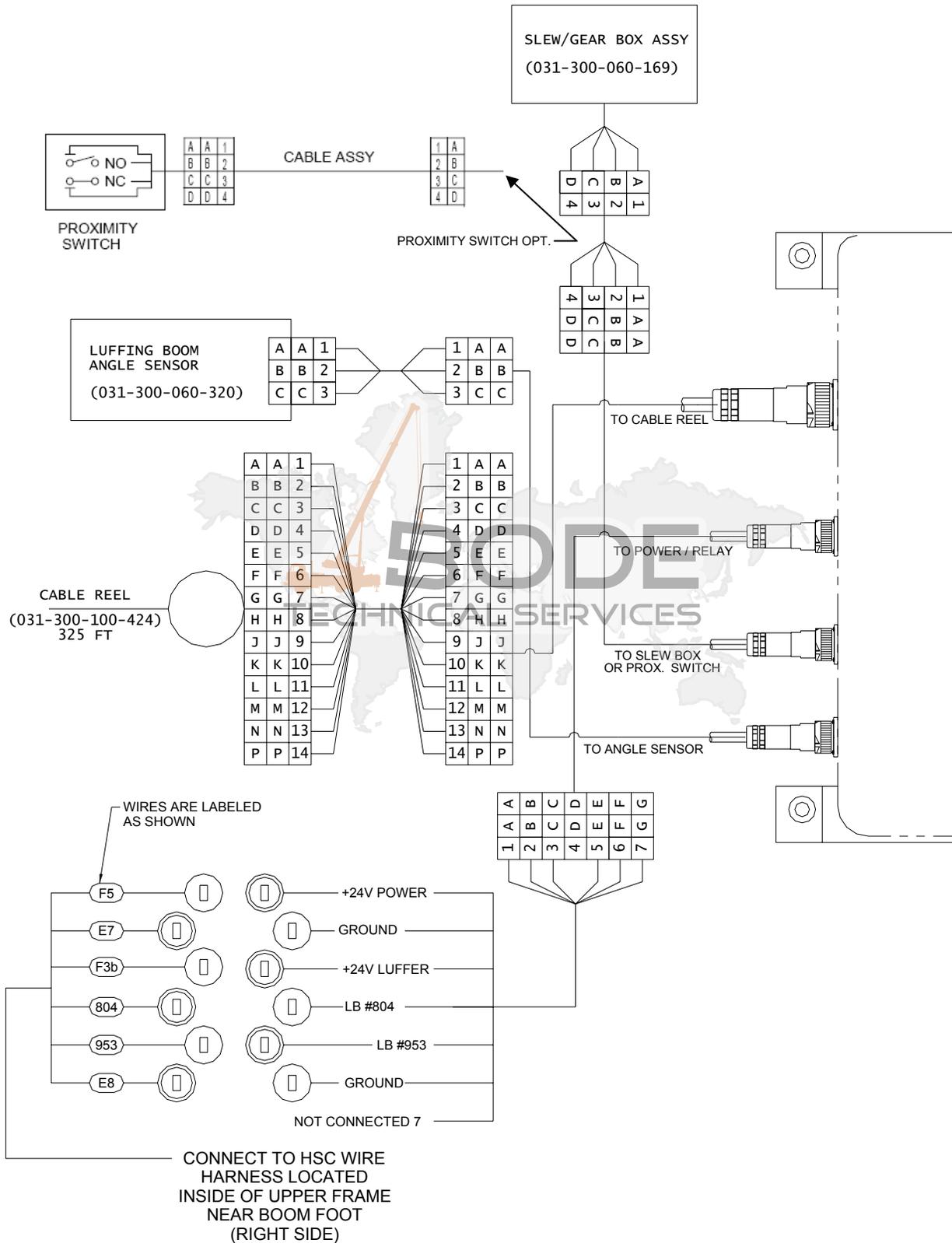
### 7.3 Electrical Wiring - Line Rider System (page 3)

DRAWING 3. Internal Wiring For Central Junction Box Assembly (PROX. SWITCH OPTION).



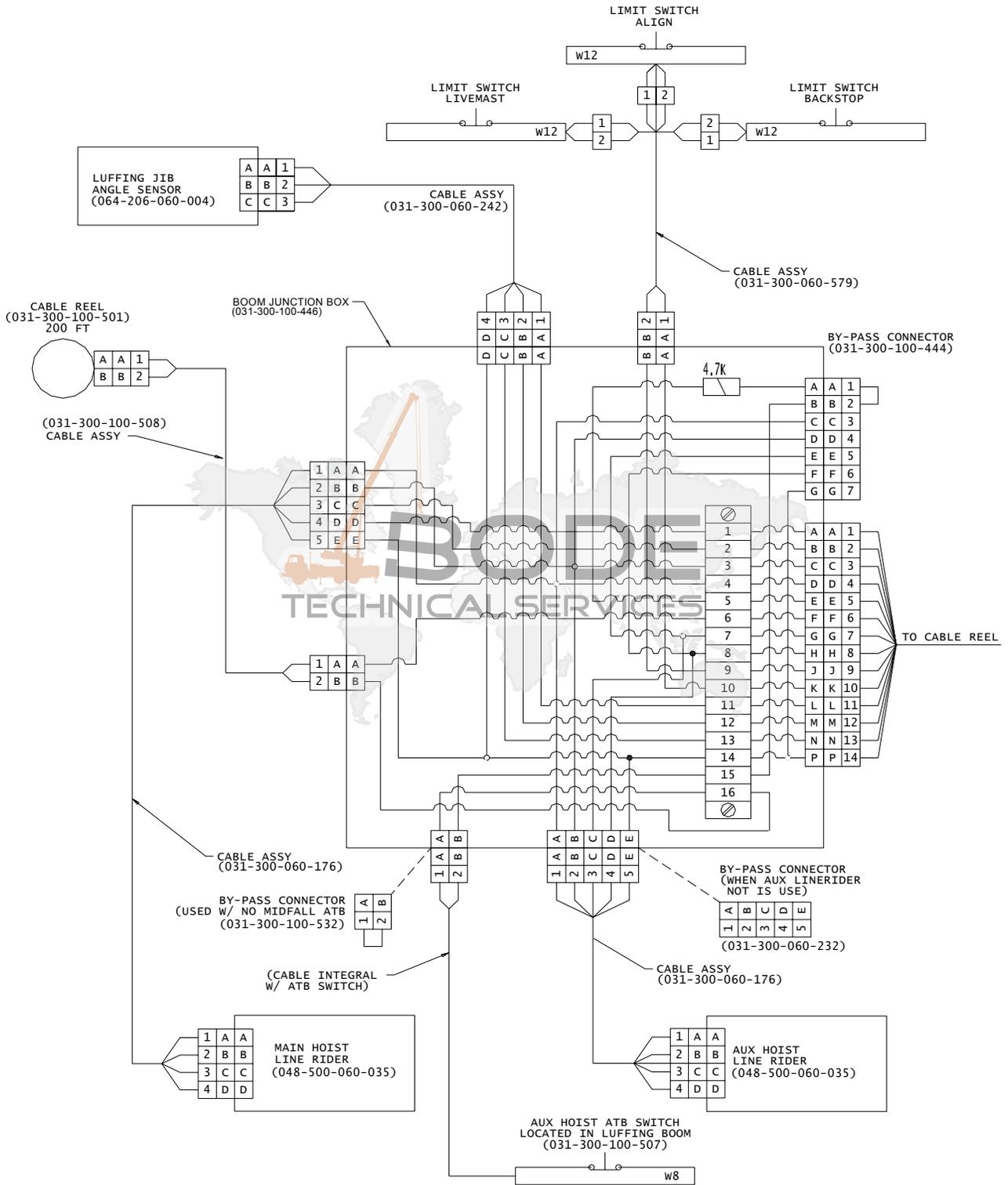
### 7.4 Electrical Wiring – Line Rider System (page 4)

DRAWING 4. Electrical Wiring For Luffing Boom – top section.



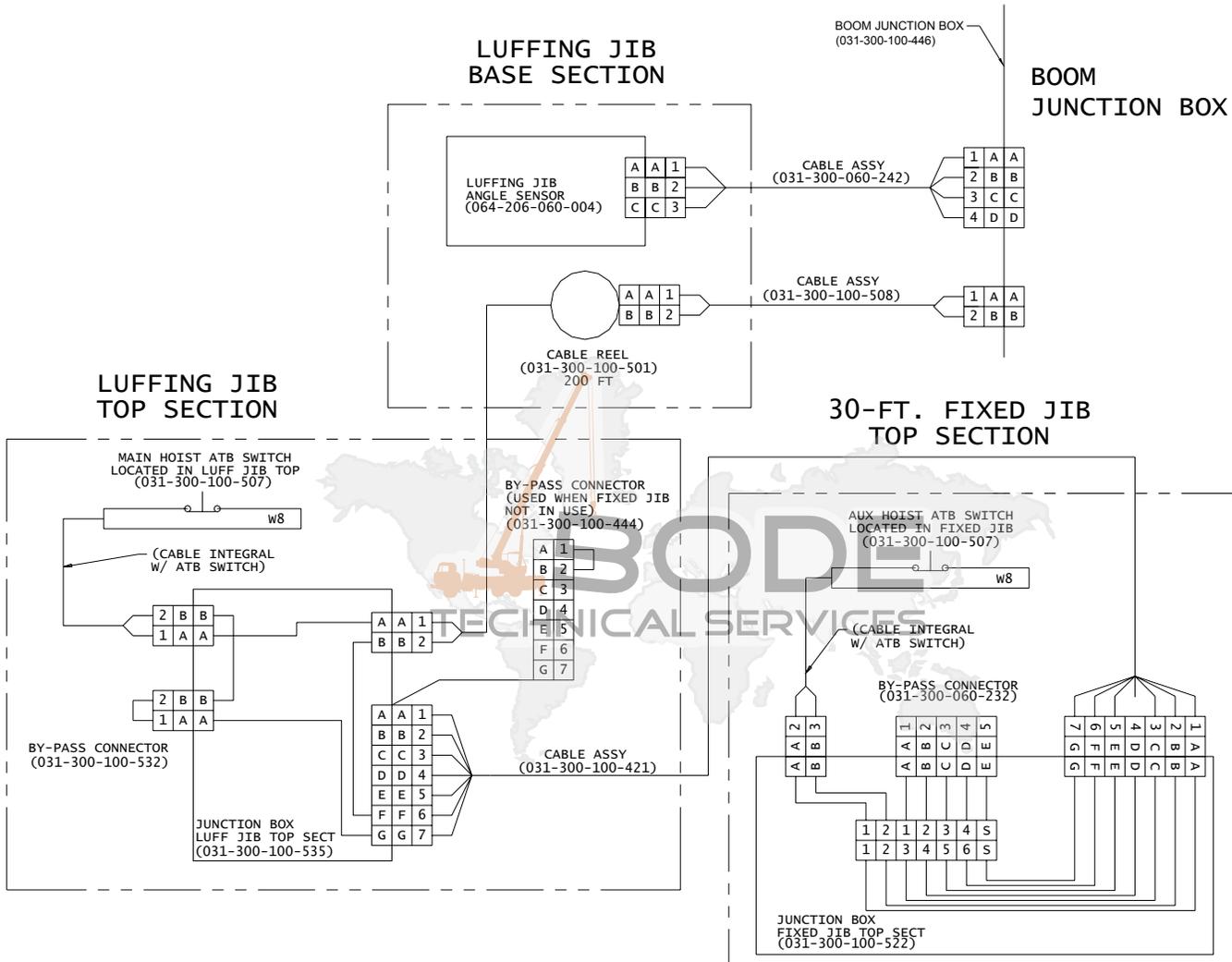
### 7.5 Electrical Wiring - Line Rider System (page 5)

DRAWING 5. Electrical Wiring For Luffing Boom – top section.



### 7.6 Electrical Wiring - Line Rider System (page 6)

DRAWING 6. Electrical Wiring For Luffing Jib Base Section, Jib Top Section and 30' Fixed Jib Section.



## 8 Quick calibration reference

**Warning: Switch power off when installing or removing components to the central unit/console**

**Note:** If the desired display can not be achieved the problem could be; wrong software, bad transducer, angle set wrong or bad sensor. **Do not continue with further calibration until you have contacted Hirschmann ECS.**

1. Connect PC to the Console, **Power ON.**
2. Go to Load then Flashloader upload. Browse to location of the files to be uploaded C:/PAT/IScout. Upload CAG\_20080219.brn, D4\_v306.brn and linkbelt\_can\_n1.brn.
3. After uploading these files, go to Tools then Copy to Eeprom then Copy All Configurations to Eeprom. Copy all files. Ensure correct software is used, correct software should come from Hirschmann ECS or PAT approved source.
4. **Power OFF** disconnect the PC from the IScout console.
5. Connect PC/laptop to IFLEX central unit using null modem cable.
6. Power up PC and open IFLASH software go to Program then Terminal.
7. **Power ON**, There will be text in the Terminal window assuring you are connected to the system.
8. Go to Load then Flashloader upload. Browse to location of the files to be uploaded. Example: C:/PAT/IFLEX. Upload C3a\_v304.brn, LMLGv11.brn and linkbelt\_can\_n2.brn. After uploading these files.
9. Go to Tools then Copy to Eeprom then Copy All Configurations to Eeprom. Copy all files. Ensure correct software is used, correct software should come from Hirschmann ECS or PAT approved source.
10. **Power OFF**, then **Power ON.**
11. Go to Load then Flashloader upload. Browse to location of the TLK and DATA files to be uploaded Ensure correct software is used, correct software should come from Hirschmann ECS or PAT approved source and should be for the Crane model and serial number. Upload these files You will see software information in the Terminal window.
12. Acquire a test data sheet and fill in the crane model, S/N, date and the SN's of PAT components etc.,
13. Mechanically zero the angle and slew angle sensors
14. Zero lineriders and slew angle sensors through the console. Directions are in the iSCOUT Operator's Manual page 51 using the ACCESS CODE "67676".
15. Verify Area of Definition is switching properly. Record on Calibration Information Sheet (pg. 9).
16. From the Terminal window PRESS "T" then "Y" to initialize the data. This will eliminate E:57 also.
17. PRESS "O" then "User code [699]", then DAY, MONTH, YEAR, CRANE NO. the last 5 digits of the crane serial number.
18. Boom crane to the test load.
19. MAIN LINE RIDER CALIBRATION get main block weight with main linerider block only. PRESS "W" then "25" then Enter a +/- value to get proper block weight indication. Press "K" to exit back to the main screen. Then "W" again to get to Serial Eeprom menu.
20. Pick a known load with main linerider block only. PRESS "W" then "11" then enter a +/- value to get proper load + rigging + block indication. **Note: Do not operate crane out of the load chart for the model crane being calibrated.**
21. Repeat steps 19 and 20 (if necessary).
22. After load has been calibrated verify load and radius indications at two spots high angle and low angle. Record information on the Calibration information sheet. If any indications cannot be calibrated to SAE recommendations contact Hirschmann ECS.

23. AUXILIARY LINE RIDER CALIBRATION get main block weight with aux. linerider block only. PRESS "W" then "26" then enter a +/or – value to get proper block weight indication. Press "K" to exit back to the main screen. Then "W" again to get to Serial Eeprom menu.
24. Pick a known load with aux. linerider block only. PRESS "W" then "12" then enter a +/or – value to get proper load + rigging + block indication. **Note: Do not operate crane out of the load chart for the model crane being calibrated.**
25. Repeat steps 23 and 24 (if necessary).
26. After load has been calibrated verify load and radius indications at two spots high angle and low angle. Record information on the Calibration information sheet (pg. 9). If any indications cannot be calibrated to SAE recommendations contact Hirschmann ECS.
27. Perform a cutoff test with a load on the Load Chart. Record information on the Calibration information sheet. If the load display is good and the cutoff is 90% to 100%. Use "X" function to determine cutoff %(pg. 3). If the cutoff is not correct contact Hirschmann ECS.
28. SAVE CALIBRATION information. Go to Load then Flashloader download. Select parameterfile for download process Browse to location of the download\_ser\_EEPROM.adr file. Browse to location where calibration information is stored name the file Crane Model\_Serial Number,Version\_serial\_eeprom.brn and save.

### 8.1 Main Linerider

User Inputs	IFLASH Terminal Display	Remarks
	OM= XXXX,LS= XX.XX inside LS, MB-V= X	
PRESS "W"	ADDRESS NR. 25	Hook weight load Change this value until load display is correct <b>Note: Start with a +/- 10.</b>
PRESS "K"	OM= XXXX,LS= XX.XX inside LS, MB-V= X	PRESS "K" to exit
PRESS "W"	ADDRESS NR. 11	Hook weight+ rigging + known load Change this value until load display is correct <b>Note: Start with a +/- 100.</b>

### 8.2 Auxiliary Linerider

User Inputs	IFLASH Terminal Display	Remarks
	OM= XXXX,LS= XX.XX inside LS, MB-V= X	
PRESS "W"	ADDRESS NR. 26	Hook weight load Change this value until load display is correct <b>Note: Start with a +/- 10.</b>
PRESS "K"	OM= XXXX,LS= XX.XX inside LS, MB-V= X	PRESS "K" to exit
PRESS "W"	ADDRESS NR. 12	Hook weight+ rigging + known load Change this value until load display is correct <b>Note: Start with a +/- 100.</b>

### 8.3 Function X: Cutoff test

User Input	Hand Terminal Display	
PRESS "X"	Enter measured radius or "ENTER"	
Enter measured radius, Press "ENTER"	RAT LOAD = XXXX ACT LOAD = XXXX	
Enter actual load. Press ENTER	RAT R/A = XXXX CUTOFF = XXXX	The cutoff percent will be shown on the hand terminal. Record this on the test sheet.
PRESS "K"	OM= XXXX,LS= XX.XX inside LS, MB-V= X	PRESS "K" to exit

## 9 iFLASH

### 9.1 iFLASH PC introduction

iFLASH PC supports the user in the terminal, uploading, and downloading BRN files.:

iFLASH PC is a program for Microsoft Windows operating systems as of Windows 98. The user and control system primarily communicate via a terminal program by using a serial interface. Within the terminal program, basic functions can be executed using the menu selection. Furthermore, iFLASH PC supports the user with additional dialogs for easy operation of the system, especially when exchanging data.

iFLASH PC is a software toolbox used for configuration, start-up and service of PAT devices with RTOS operating systems such as iFLEX5, DS85, SLI, ECIS and ¼" VGA console.

### 9.2 System prerequisites

To install *iFLASH PC* on a PC, the following conditions should be satisfied:

- PC min. 486 / 100 MHz
- Operating systems:
  - Windows 98 or higher
  - Windows NT4 with Service Pack 6
  - Windows 2000 or higher
- Memory:
  - 15 MB free memory on hard disk
  - min. 32 MB RAM
- Graphics:
  - VGA graphic card
  - Resolution 800 x 600 (1024 x 768 recommended).
- RS232 interface

### 9.3 Program menu

The Menu program contains the actual work functions for exchanging data with iFLEX5. These are:

#### 9.3.1 Terminal

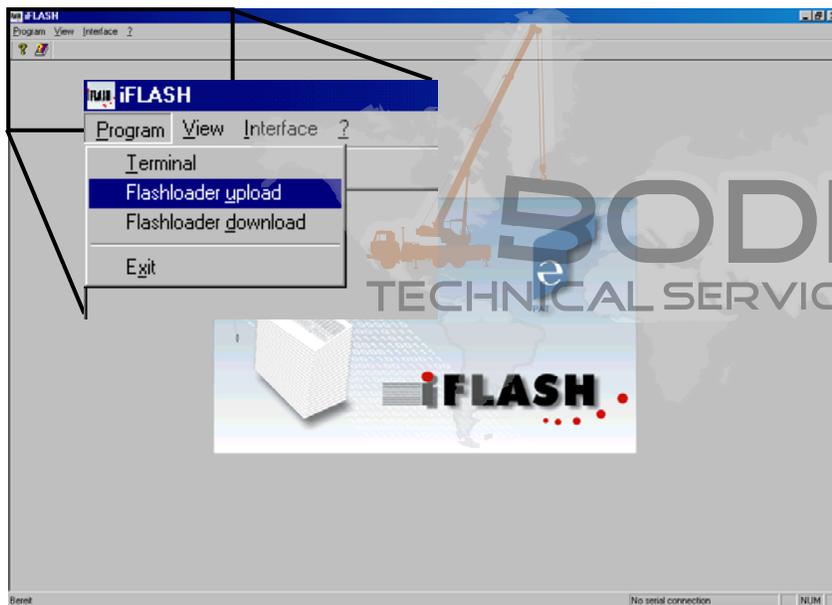
The terminal window is the communication center for the system. All outgoing messages from the system are shown in this window, allowing for troubleshooting system inputs, output, and sensors.

#### 9.3.2 Flash loader upload

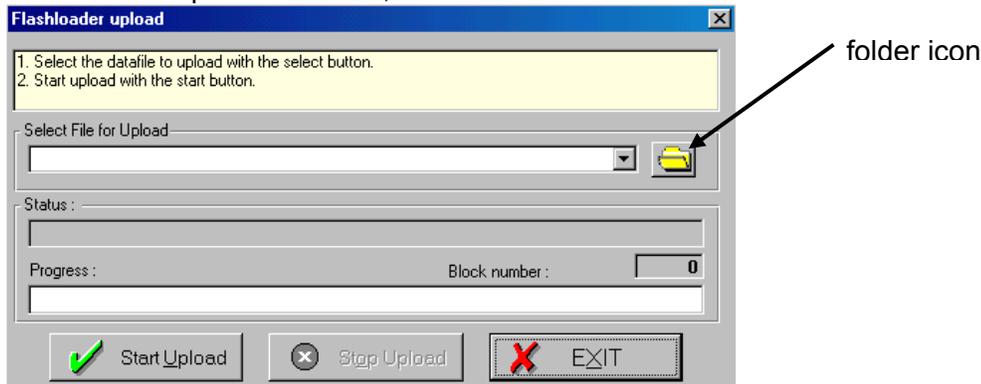
This dialog is used to transfer data (BRN files) into the Flash storage of the system. There are 3 different file types system, data, and TLK that will be uploaded for operation. Upload one or all three files as necessary to update your system. Note: Only upload files received from PAT America. System software is the operating software, which calculates and displays the system function. Data software is crane dimensional data, which include measurements of boom, sheaves offset, and hoist position. TLK software is the load charts. Both data and TLK software are required for the system software to operate.

To upload, proceed as follows:

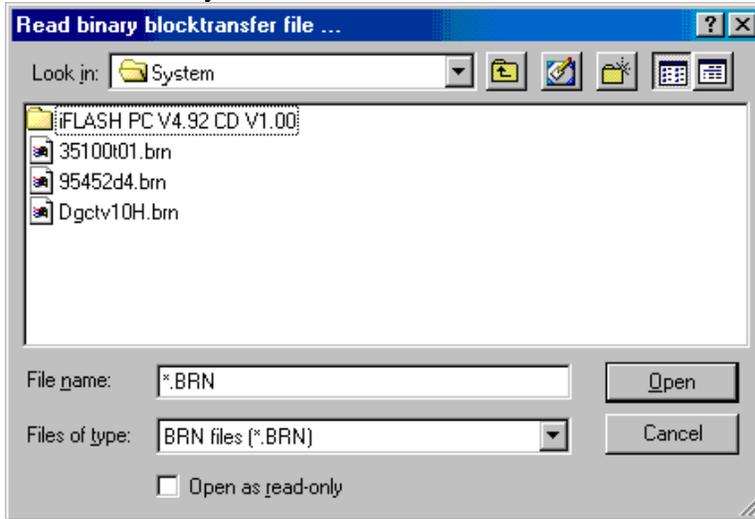
1. Initiate the upload process by selecting Flash loader upload from the Program Menu



2. Choose the open folder icon, to browse for location of software on PC.

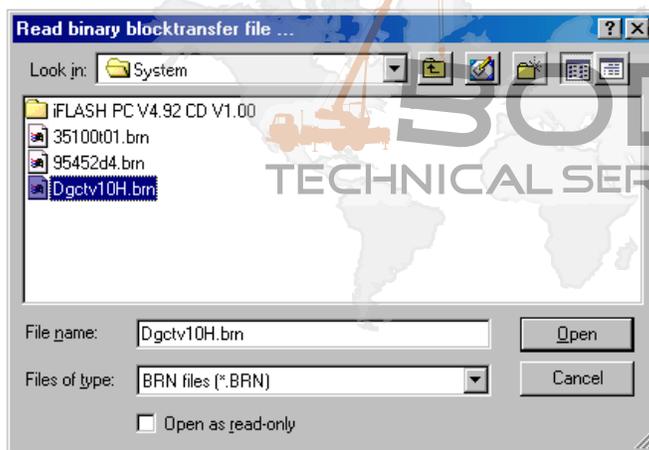


3. Select directory of where the software is stored in from the “look in” box.



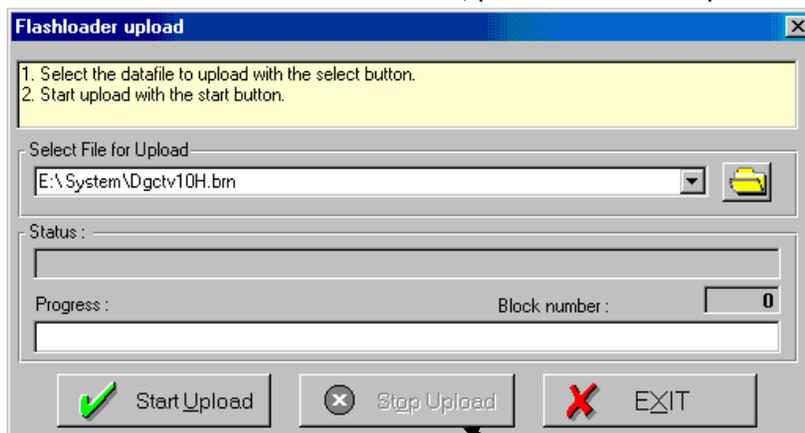
4. Highlight the software file you choose to upload. Ensure that file extension reads .BRN and press Open. The following is an explanation of the software file names:

- System software: DGCTvXXX.brn (example: DGCTv10H.brn, where DGCT is the software designation, v is for version and 10H is the version number)



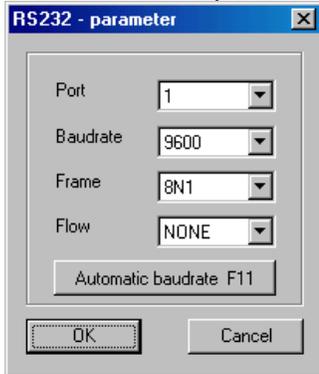
- Data software: DXXXXXXXXX.brn, the file name begins with a D and then is followed by 6 to 9 digits, the crane model number and 2 digits. (example D22101c00.brn)
- TLK software: TXXXXXXXXX.brn, the file name begins with a T and then is followed by 6 to 9 digits, the crane model number and 2 digits. The 2 digits are; 00 – main boom, 10 – fixed jib, and 20 – tele jib.. (example T22101c00.brn)

5. After the correct file is selected, press the “Start Upload” Icon.

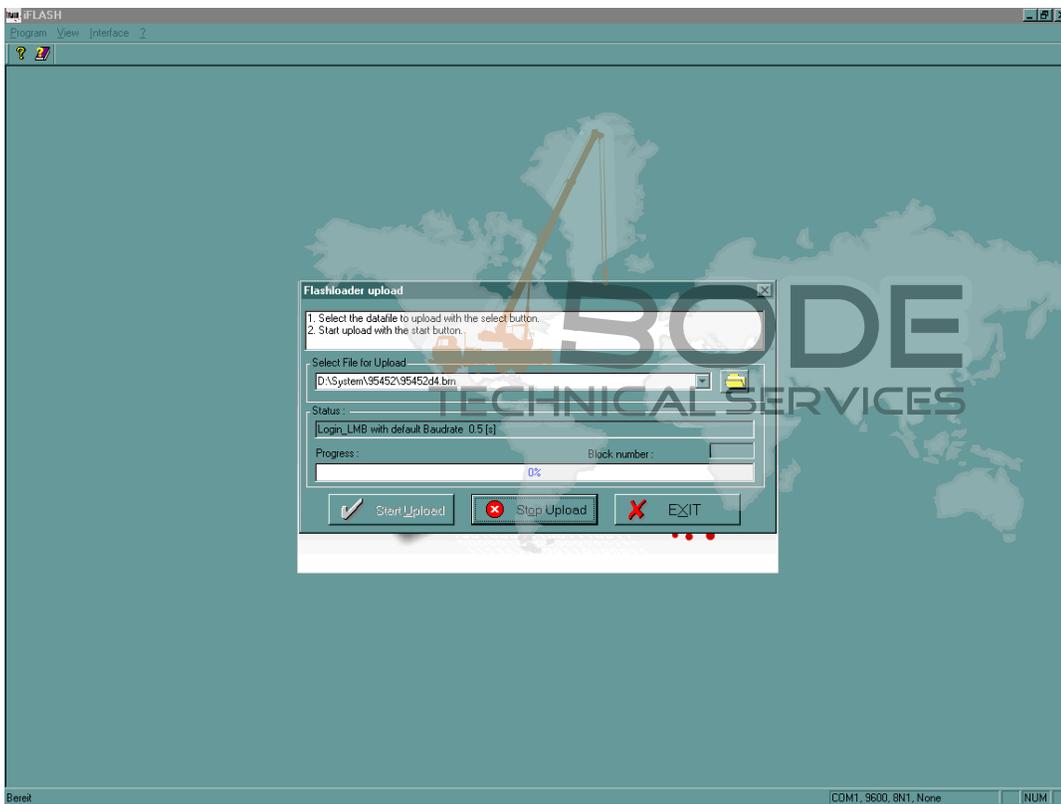


Start upload

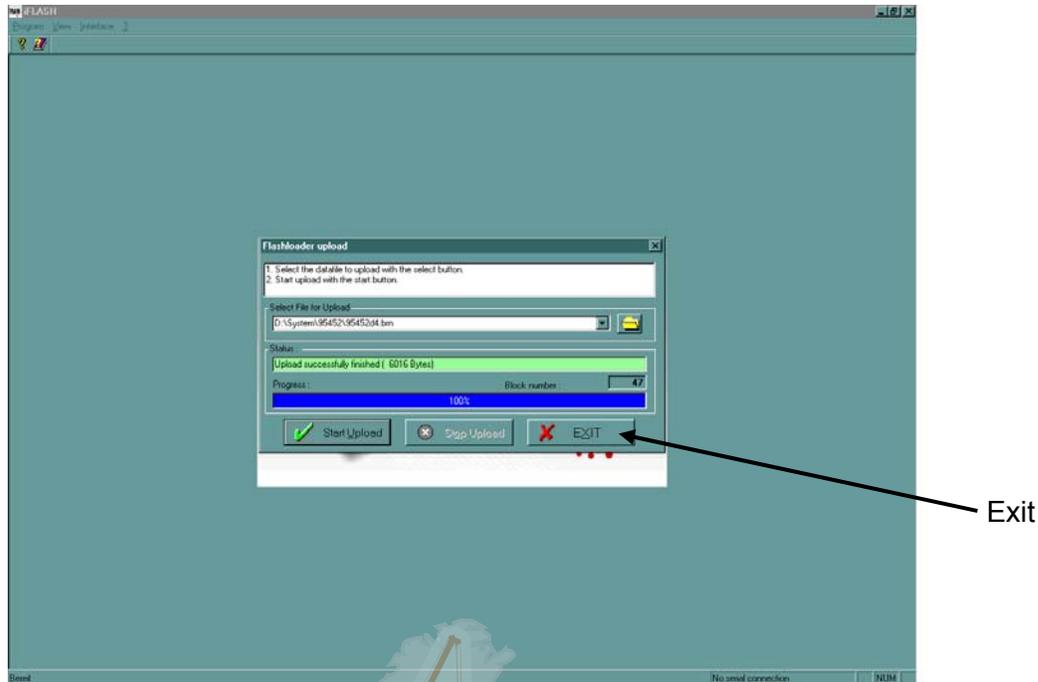
6. Ensure the parameters correspond with the settings below before proceeding, and select “OK”.



7. At this point, the upload process will begin.



8. After file successfully transferred, as indicated in the Status bar. Select the “EXIT” icon.

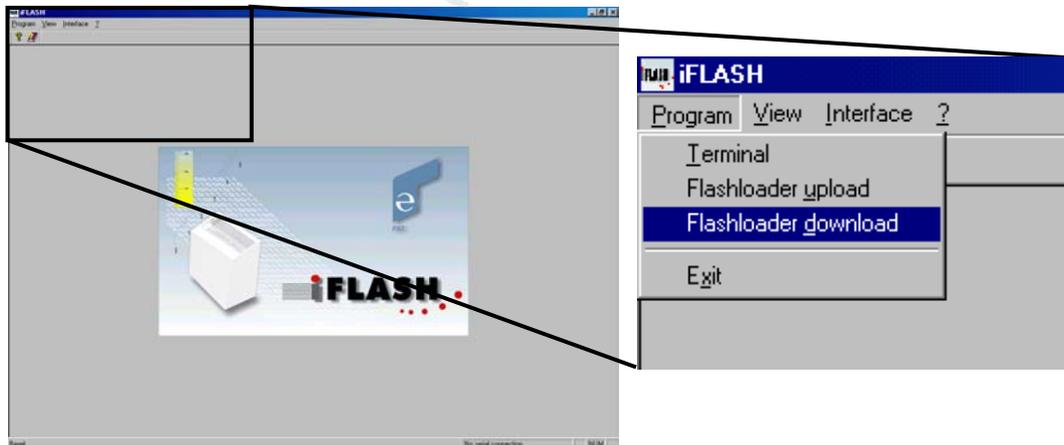


If necessary, this process will need to be completed for each of the three file system, data, and TLK. If there is a transfer failure you will get an error message in the status bar, retry the procedure or contact PAT service.

### 9.3.3 Flash loader download

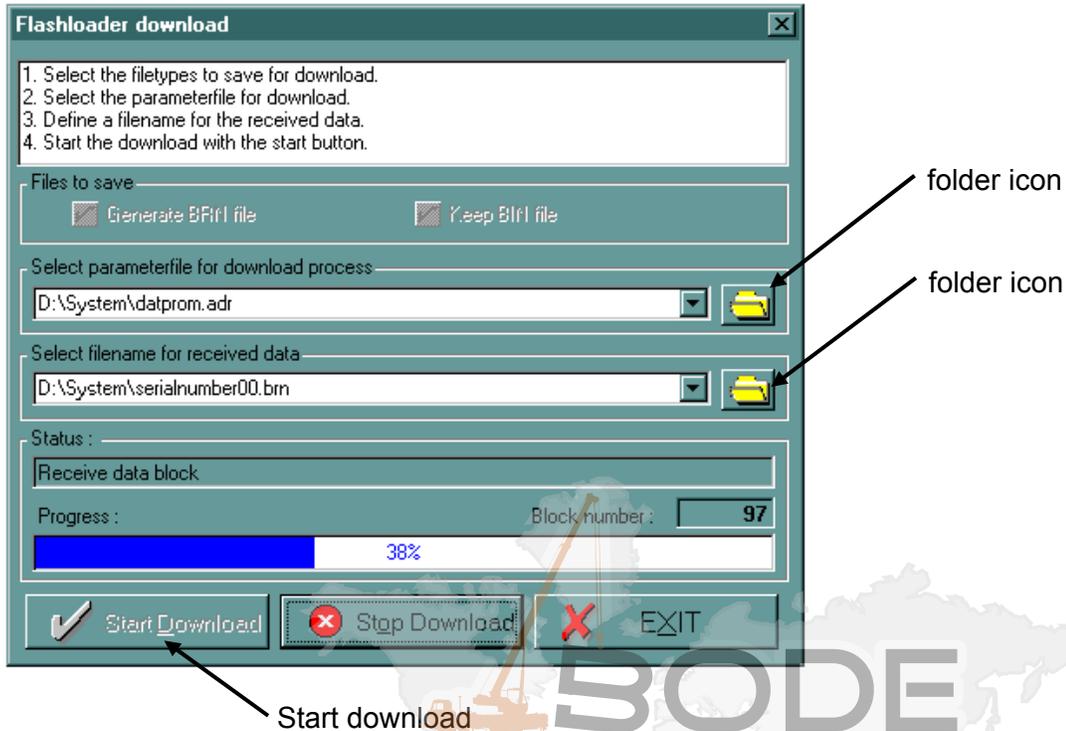
This dialog is used to transfer data from the flash memory of the iFLEX5 onto the PC. A download is executed as follows:

1. Initiate the upload process by selecting Flash loader upload from the Program Pull-down Menu.



2. “Generate BRN file” will already be selected.
3. Select “Keep BIN file”, it will now have a check mark by it as shown.
4. Choose the open folder icon to “select parameterfile for download process” and browse for file location. The following software files must be given to you from Hirschmann ECS in order to download the Data (download\_ser\_EEPROM.adr).

5. Choose the open folder icon to “select filename for received data”. Name the file as follows: Crane Model plus Serial number last 5 digits (XXXXX) and revision #(00,01,02...). (example HC238\_8979900\_ser\_EEPROM.brn).
6. Select “Start Download” to begin down load. The progress bar will increase in blue as the precentage.



If there is a transfer failure you will get an error message in the status bar, retry the procedure or contact PAT service.

