***Note**: Make sure that the maximum printhead data cable length of 15 m is not exceeded.*

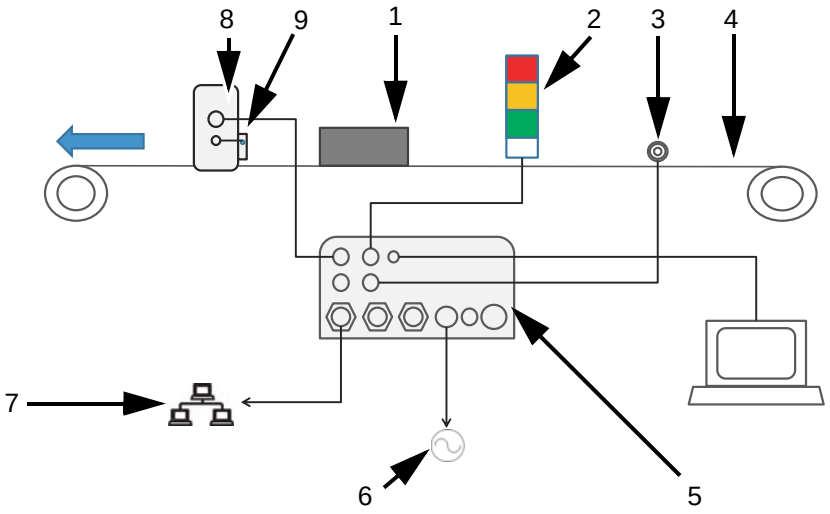
The mounting brackets allow you to attach the controller as required to a suitable location.

Controller and Printhead Connections

Do the following tasks to connect the printhead and controller:

***Note:** Do not connect the AC power source to the controller before connecting the printhead(s).*

***Note:** The shaft encoder is optional. For installing the shaft encoder, refer to "Installation of Shaft Encoder (Optional)" on page 4-14.*



1. Product
2. Beacon
3. Shaft Encoder
4. Conveyor Belt
5. Controller
6. Mains Power Supply
7. Ethernet
8. Back of Printhead
9. Product Sensor

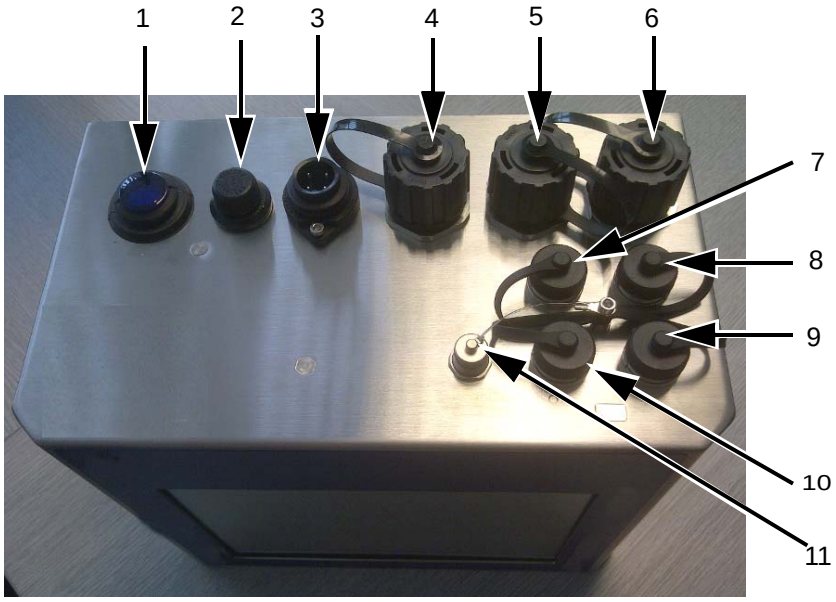
Figure 4-14: System Overview

1 Connect and route the cables from the controller to the printhead and external devices. Ensure all connections are secure.

***Note:** Keep any unused connections covered with the caps provided to maintain IP integrity.*

***Note:** Make sure that the communication cables are laid at a sufficient distance from all sources of interference. Do not lay the cable parallel to any frequency converters or servo-motor cables.*

Figure 4-15 shows the connections on the controller.



1. Power Switch
2. Fuse Holder
3. AC Power Connector
4. USB
5. Power Over Ethernet
6. Ethernet
7. Encoder (ENC)
8. Printhead 2 Dataline
9. Printhead 1 Dataline
10. Input/Output (I/O)
11. Serial Port (IOIOI)

Figure 4-15: Controller Connections

Item Number	Ports	Connectors	Description
3	AC Power Connector		Connects to mains power supply with mains power cable (refer Table 7-2 on page 7-5).
4	USB		USB-A Port that connects a USB memory stick for functions such as printer software updates, transferring Jobs and backup/restore of printer archive or clone files.
5	Power Over Ethernet		RJ-45 port connects to a TCP/IP network device that requires Power Over Ethernet (POE) support through a suitable ethernet cable (refer Table 7-4 on page 7-9).
6	Ethernet		RJ-45 port connects to a TCP/IP network through a suitable ethernet cable (refer Table 7-4 on page 7-9).

Table 4-2: CLARiTY Controller connections

Item Number	Ports	Connectors	Description
7	Encoder (ENC)		Connects shaft encoder to the controller to inform the software how fast the substrate is traveling using a shaft encoder cable (refer Table 7-6 on page 7-12).
8	Printhead 2 Dataline		Connects the data cable that runs between printhead 2 and the controller (refer Table 7-4 on page 7-9).
9	Printhead 1 Dataline		Connects the data cable that runs between printhead 1 and the controller (refer Table 7-4 on page 7-9).
10	Input/Output (I/O)		Connects external devices to the printer's hardware inputs and outputs using the I/O cable (refer Table 7-4 on page 7-9).
11	Serial Port (IOIOI)		RS-232 Serial Port connects PC, PLC or other capable device using the serial port cable (refer Table 7-4 on page 7-9).

Table 4-2: CLARiTY Controller connections

Warning

PERSONAL INJURY. The controller must be switched off when the printheads are being installed.

In general, the controller must always be switched off before you connect or disconnect any external items except for USB/Ethernet cables.

How to Set the External Inputs & Outputs

How to Set the External Inputs

In addition to the input for product sensor on the printhead, the CLARiTY also comes with six additional digital inputs. These six inputs are managed through the I/O connector.

This menu assigns different functions to the inputs.

To configure the inputs go to *Devices* > *PHds* > *(either 1 or 2 dependent on printhead IO being configured)* > *Input Configuration*. Select *Input Configuration* and the inputs 1-6 will appear along with a usage column. Select the required usage for each input and identify as either Active High or Active Low.

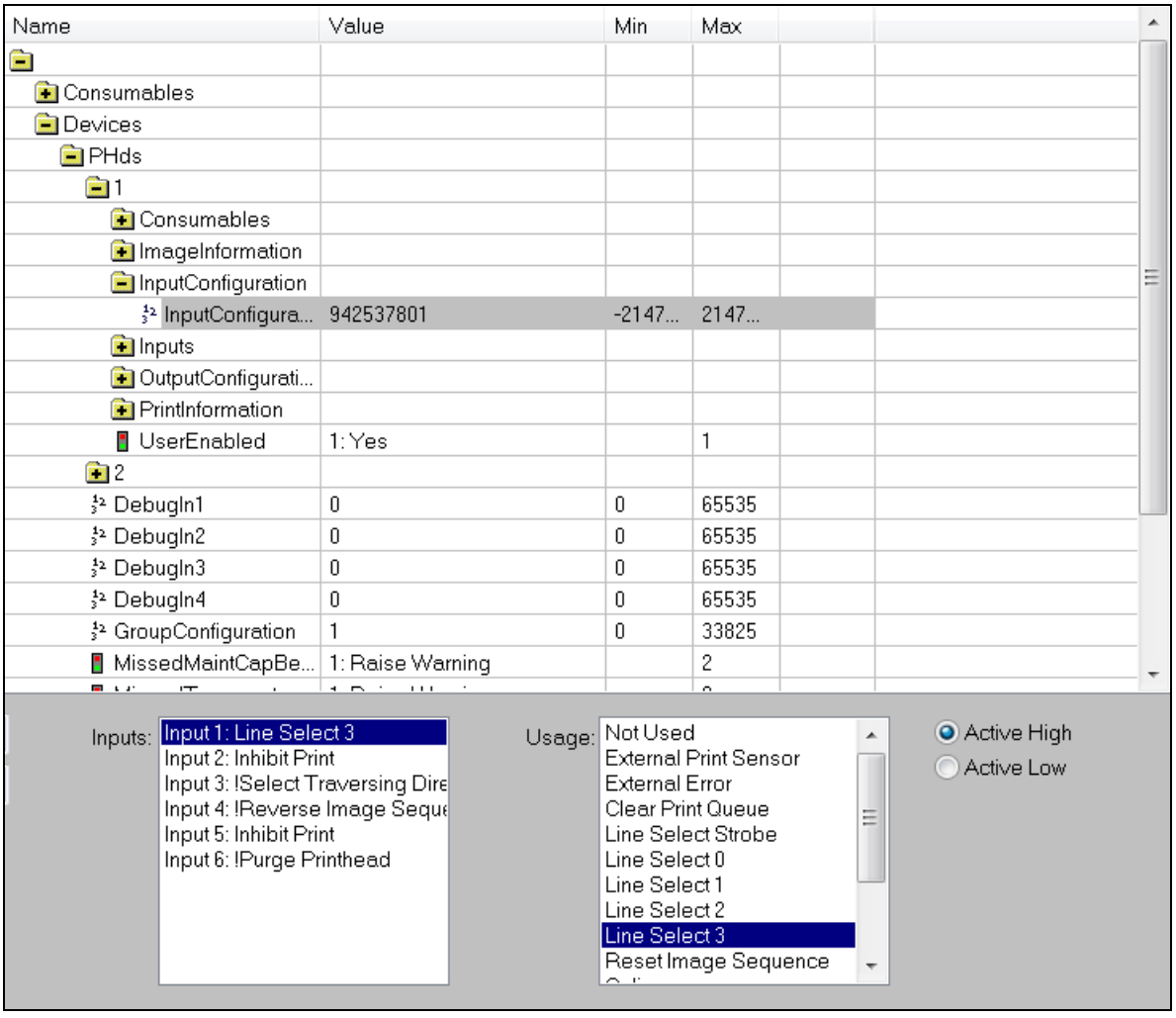


Figure 5-14: Input Configuration

Usage for Inputs 1-6
Not Used
External Print Sensor
Inhibit Print
External Error - When activated, this input will generate a fault condition and stop the printer. This may be used to interlock the printer with external equipment.
Clear Print Queue - When activated, this will clear the current job and empty the print queue.
Line Select Strobe
Line Select 0
Line Select 1
Line Select 2
Line Select 3 ***Note:*** *In a Line Select setup, Line Select 3 must be assigned to Input 3 only.*
Reset Image Sequence
Reverse Image Sequence
Purge Printhead
Online
Offline
Select Traversing Direction - Refer to “Traversing Mode” on page 5-25.
Block Warming Enable
Open Cap
Close Cap

Table 5-1: External Input Options

External Outputs

External Outputs 1-4

The CLARiTY has four digital outputs. The outputs indicate various items of information about the status of the CLARiTY. The outputs 1-4 are configurable.

To configure the outputs go to *Devices* > *PHds* > *(either 1 or 2 dependent on printhead IO being configured)* > *Output Configuration*. Select *Output Configuration,* and the options for configuration are shown for output activation and/or deactivation.

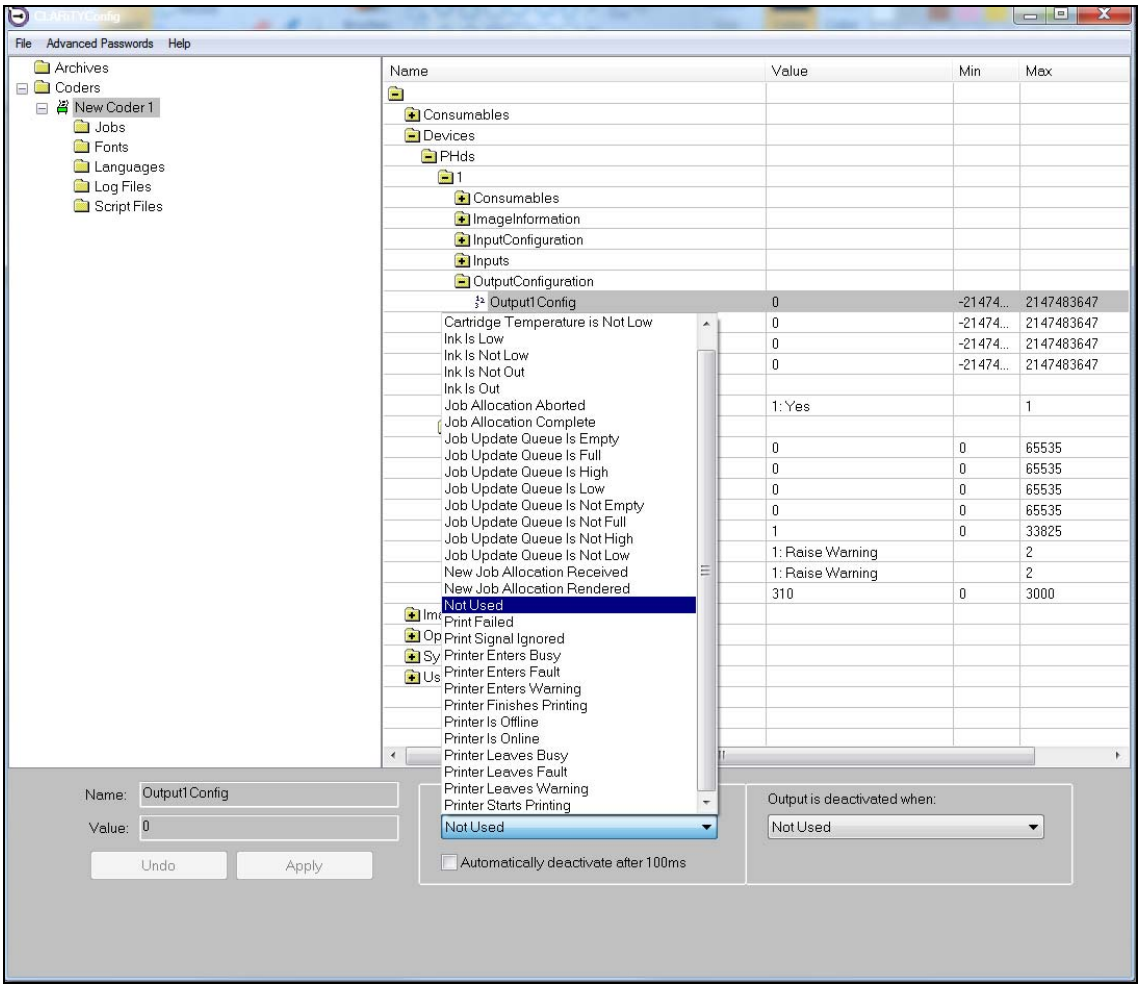


Figure 5-15: External Outputs

The options for selection are listed in Table 5-2.

Options
Cartridge Temperature is low
Cartridge Temperature is not low
Ink Is Low
Ink Is Not Low
Ink Is Not Out
Ink Is Out
Job Allocation Aborted
Job Allocation Complete
Job Updated Queue Is Empty
Job Updated Queue Is Full
Job Updated Queue Is High
Job Updated Queue Is Low
Job Updated Queue Is Not Empty
Job Updated Queue Is Not Full
Job Updated Queue Is Not High
Job Updated Queue Is Not Low
New Job Allocation Received
New Job Allocation Rendered
Not Used
Print Failed
Print Signal Ignored
Print Enters Busy
Printer Enters Fault
Printer Enters Warning
Printer Finishes Printing
Printer Is Offline
Printer Is Online
Printer Leaves Busy

Table 5-2: External Output 1-4 Options

Options
Printer Leaves Fault
Printer Leaves Warning
Printer Starts Printing

Table 5-2: External Output 1-4 Options (Continued)

Status of the Warning Beacon in Typical Setup

The external outputs 1-4 are evaluated with reference to the status of the warning beacon (see Figure 5-16).

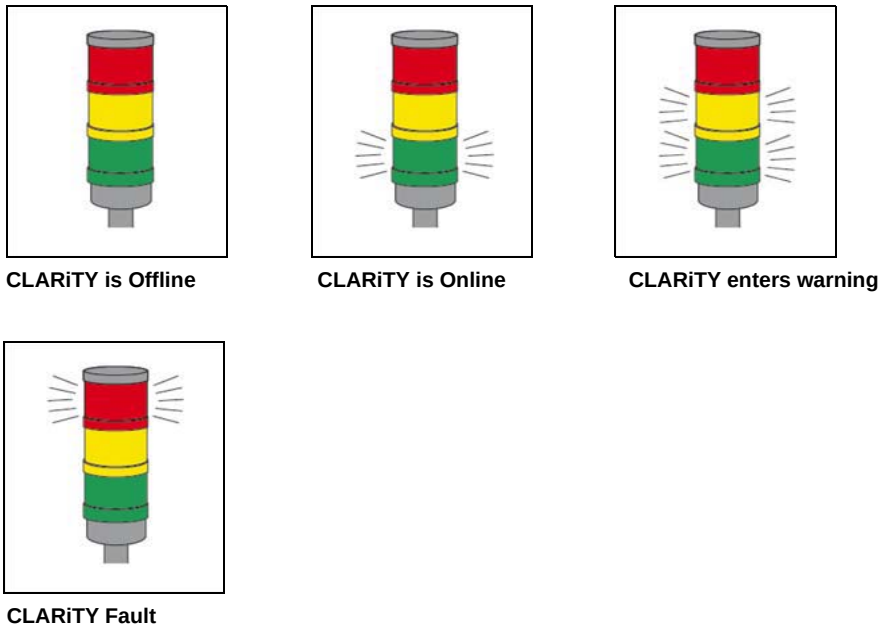


Figure 5-16: Various Indications of the Warning Beacon in Typical Setup

The following are the normal external output options:

1. Offline/Online
2. Enters/Leaves Warning
3. Enters/Leaves Fault

Note: *The default status of the warning beacon is Offline.*

I/O

14-way Socket Pin DESCRIPTION

Controller	Wire	Color A	Color B	Pin Description
A	1	Black	Black	+24 VDC
C	2	White	White	0 V
E	3	Red	Red	CONFIGURABLE INPUT (PNP) #1
G	4	Green	Green	CONFIGURABLE INPUT (PNP) #2
J	5	Orange	Orange	CONFIGURABLE INPUT (PNP) #3
L	6	Blue	Blue	CONFIGURABLE INPUT (PNP) #4
M	7	White/ Black	Brown	CONFIGURABLE INPUT (PNP) #5
N	8	Red/ Black	Red/Black	CONFIGURABLE INPUT (PNP) #6
O	9	Green/ Black	Pink	VOLT-FREE RELAY (N/O) OUTPUT #1
P	10	Orange/ Black	Yellow	VOLT-FREE RELAY (COM) OUTPUT #1
R	11	Blue/ Black	Light Green	PNP OUTPUT #2
S	12	Black/ White	Purple	PNP OUTPUT #3
T	13	Red/ White	Red/White	PNP OUTPUT #4
U	14	Green/ White	Grey	0 V

Table 5-3: I/O Cable Wiring Details

Note: *For Pin Information on encoders and product sensor, refer to* *"Pin Assignment" on page A-7.*

Pin Assignment

Product Sensor

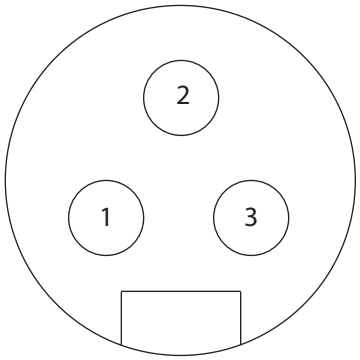


Figure A-4: Pin Assignment for Product Sensor

PIN	Function	Value	Cable Color	I/O
1	Output signal of product sensor	GND (0 V DC)	black	<-
2	Vcc	+ 24 V DC	brown	->
3	GND	Ground (0 V)	blue	->

Table A-5: Pin Assignment for Product Sensor

Encoder

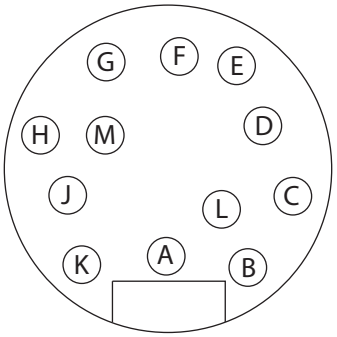


Figure A-5: Pin Assignment for Encoder

PIN	Function	Value	I/O
A	-		
B	GND	0 V DC	-> O
C	Output signal A		<- I
D	GND (jumpered in plug)		
E	Output signal A, inverted		<- I
F			
G	Vcc	+5 V DC max. 0,5 A	-> O
H	Output signal B (90° out of phase)		<- I
J	GND (jumpered in plug)		
K	Output signal B, inverted		<- I
L			
M			

Table A-6: Pin Assignment for Encoder

Encoder Extension Cable

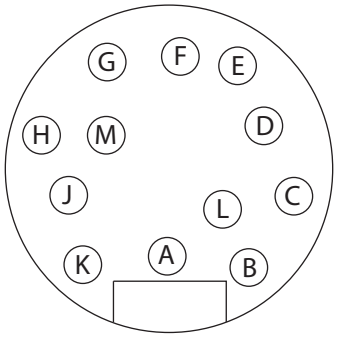


Figure A-6: Pin Assignment for Encoder

PIN on Connector	Function	PIN on Coupler
A		A
B	GND	B
C	Output signal A	C
D	GND (jumpered in plug)	D
E	Output signal A, inverted	E
F		F
G	Vcc	G
H	Output signal B (90° out of phase to A)	H
J	GND (jumpered in plug)	J
K	Output signal B, inverted	K
L		L
M		M

Table A-7: Pin Assignment for Encoder Extension Cable