MDR710 Troubleshooting Guide

Product: MDR710

Responsibility: Maintenance	**Revision: 2.0 (03-2014)**	**Verified:** CCC
Tools required:		**Time Required:**

1.0 Purpose: To provide the tools to assist in troubleshooting MDR710 conveyor systems.

2.0 Scope: This Work Instruction is applicable to MDR710 with the HB-510 Control Card and/or B&R control modules.

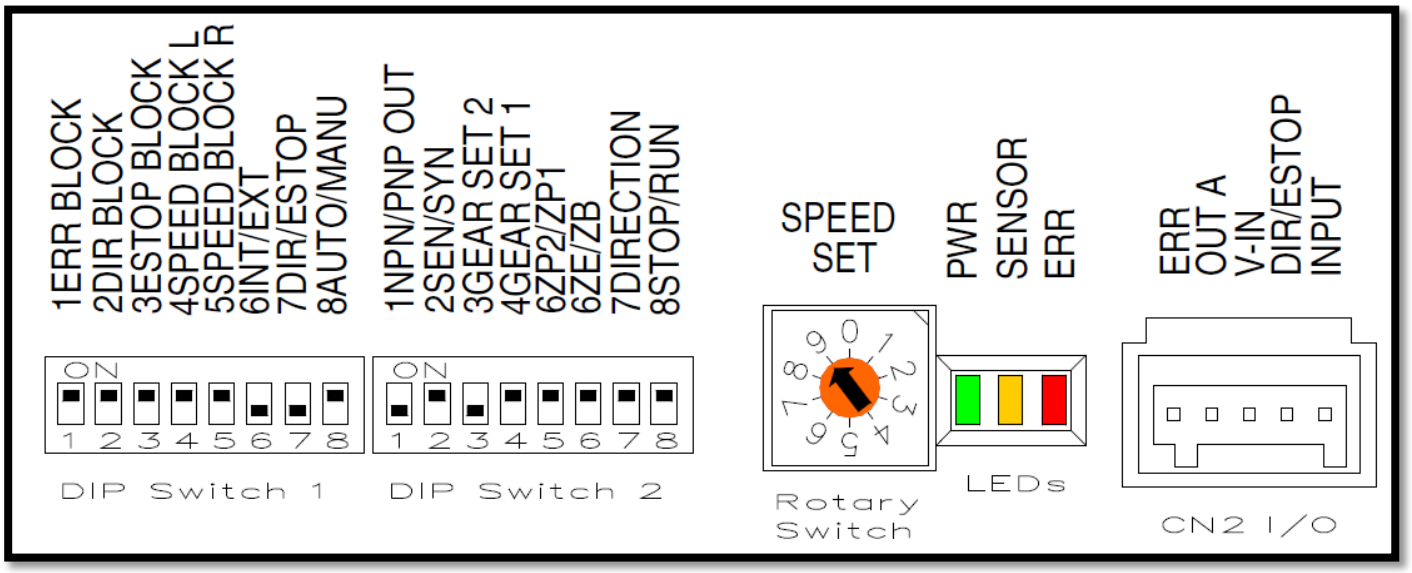
3.0 Safety: Follow all existing plant safety procedures.

4.0 Itoh Denki Control Card

4.1 Switch Settings

NOTE: When replacing a Control Card BE SURE to set the DIP switches on the new card to the same settings as the card you remove. Double check the settings before disposing of the old card. This will reduce the risk of incorrect settings.

4.2 User Interface – default settings



4.3 Dip Switch Settings

DIP Switch (SW1) Settings

Switch #	Switch Description	OFF Description	ON Description
SWI-1	Error Signal Transmission (CN4, CN5)	BLOCKED	TRANSMIT
SWI-2	Direction Signal Transmission (CN4, CN5)	BLOCKED	TRANSMIT
SWI-3	EStop Signal Transmission (CN4, CN5)	BLOCKED	TRANSMIT
SWI-4	Speed Signal Transmission Left (CN5)	BLOCKED	TRANSMIT
SWI-5	Speed Signal Transmission Right (CN4)	BLOCKED	TRANSMIT
SWI-6	Speed Source	INT (Internal via Speed Potentiometer)	EXT (External 0-10 VDC speed command on CN2-3)
SWI-7	Input Signal Function for CN2-2	DIR (Input ON to reverse direction)	ESTOP (Input ON for Estop)
SWI-8	Thermal Reset Recovery	AUTOMATIC (When motor and/or card cools down, then automatically resets)	MANUAL (Requires recycling power)

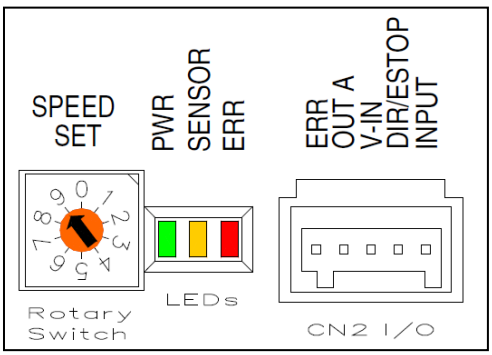
DIP Switch (SW2) Settings

Switch #	Switch Description	OFF Description	ON Description
SW2-1	Output Signal Type for CN2-4 & CN2-5	NPN	PNP
SW2-2	Output Signal Function for CN2-4	SEN (Output is ON when photo eye blocked, input on CN3-2 is on)	SYN (Output is ON motor is running)
SW2-3	Gear Select 1	See Chart	See Chart
SW2-4	Gear Select 2	See Chart	See Chart
SW2-5	Release Mode	ZP1 (Slug Release)	ZP2 (Singulation Release)
SW2-6	Zone Type	ZE (Last Zone on conveyor line, or remote controlled)	ZB (Standard Zone under local control)
SW2-7	Motor Direction (Looking at Cable Side)	FS & FP Rollers – CW FE Rollers – CCW	FS & FP Rollers – CW FE Rollers – CCW
SW2-8	Input Signal Function for CN2-1	STOP (Forcible Stop, won't allow product to exit zone while the input is on)	RUN (Forcible Run if eye is not blocked, etc.)

4.4 LED Indications

The three LEDs on the card indicate the status for:

- **Power** (PWR - Green)
- **Sensor** (SENSOR – Orange)
- **Errors** (ERR – Red)



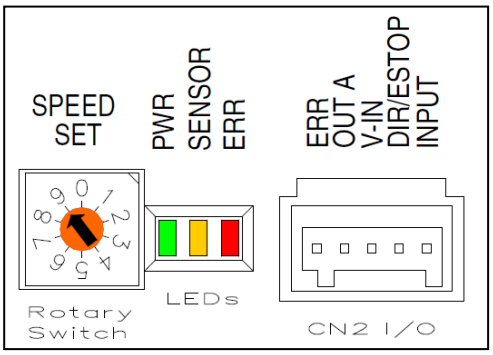
The following chart shows Error Indications for the Control Card LED's

Symptom	LED1 (green)	LED2 (orange)	LED3 (red)	ERR Signal (CN2-5)	Cause	Effect	Solution*
Normal	● (ON) Blinks (1Hz) ● ○ while running	(ON) When sensor signal is ON	○ (OFF)	● (ON)	n/a	n/a	**n/a**
Thermal overload	● (ON)		● (ON)	○ (OFF)	Motor or PCB above operating temperature	No operation	**1**
Motor stops			Blinks (1Hz) ● ○	● (ON)	Motor locked (≥4s)		**2**
Motor unplugged			● (ON)	○ (OFF)	Motor is not connected to card		**3**
JAM error		Blinks (1Hz) ● ○	○ (OFF)		Jam Timer activated		**4**
Open fuse Low voltage	○ (OFF)	(ON) When sensor signal is ON	Blinks (1Hz) ● ○		Low voltage or current exceeded 5A		**5**
Current limit	Blinks (1Hz) ● ○ while running		Blinks (6Hz) ●○●○●○ ●○●○●○	● (ON)	High current draw	n/a	**6**

Solutions Key:

1. See information under Input / Output settings, DIP Switches 1-8
2. Remove the cause of the motor lock and clear the zone.
3. Remove power form the card, plug in the motor connector, and then reapply power.
4. Remove the cause of the jam and clear the zone.
5. Replace the card.
6. Not usually a cause for concern, unless it is occurring frequently over the entire running cycle.

4.5 Speed Settings



Speed Adjustment

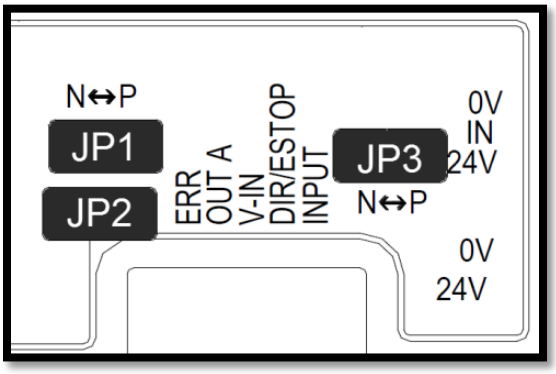
Integral Indexed Rotary Switch	External Speed Variation Signal V ±0.2	Speed*	
		m/min ±3%	ft/min ±3%
9	9.5	60	196.8
8	8.5	55	180.4
7	7.5	50	164.0
6	6.5	45	147.6
5	5.5	40	131.2
4	4.5	35	114.8
3	3.5	30	98.4
2	2.5	25	82.0
1	1.5	20	65.6
0	0.5	15	49.2

4.6 Jumper Settings

There are 3 sliding jumpers on the card which determine input signal types (NPN or PNP)

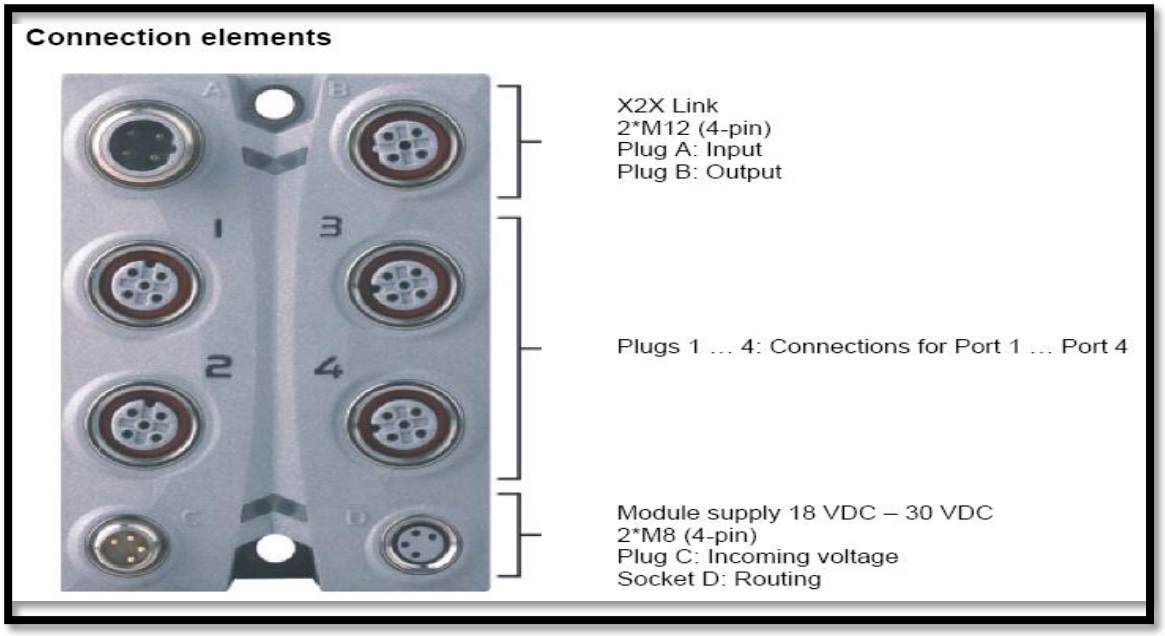
- **JP1 – INPUT (CN2-1)**
- **JP2 – DIR/E-STOP (CN2-2)**
- **JP3 – Sensor Input (CN3-2)**

These are accessible by removing the rubber grommets on the card's cover. A small precision screwdriver will work well to slide the jumpers from side to side. *Intelligrated systems are defaulted to PNP*.



5.0 B&R Control Modules

5.1 B&R Module (X67UM4389) – “Ideal” Module



Status Indicators	
Status LED for X2X bus link (Green - Red)	
Status LED for module (Green - Red)	
Status LED for each port socket (Yellow #) **LED is ON**	* Indicates that <u>either</u> a digital input or a digital output or an analog output of the respective port socket is active.
LED is OFF	* indicates that <u>neither</u> a digital input, not digital output nor an analog output of the respective port socket is active.
LED is Flashing	* indicates that an <u>error</u> at the digital output read back has been detected.

5.2 B&R Module (X67DM1321) – “Mixed” Module

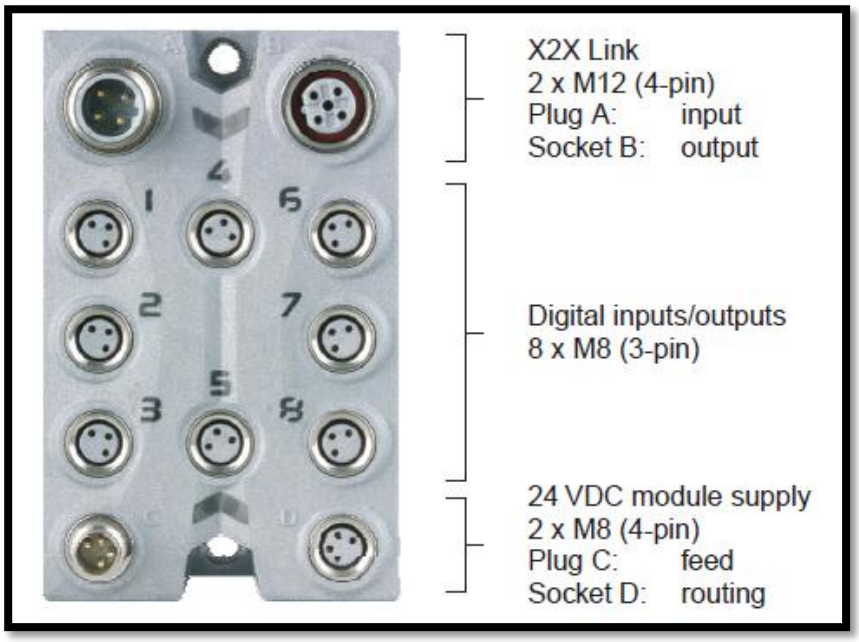


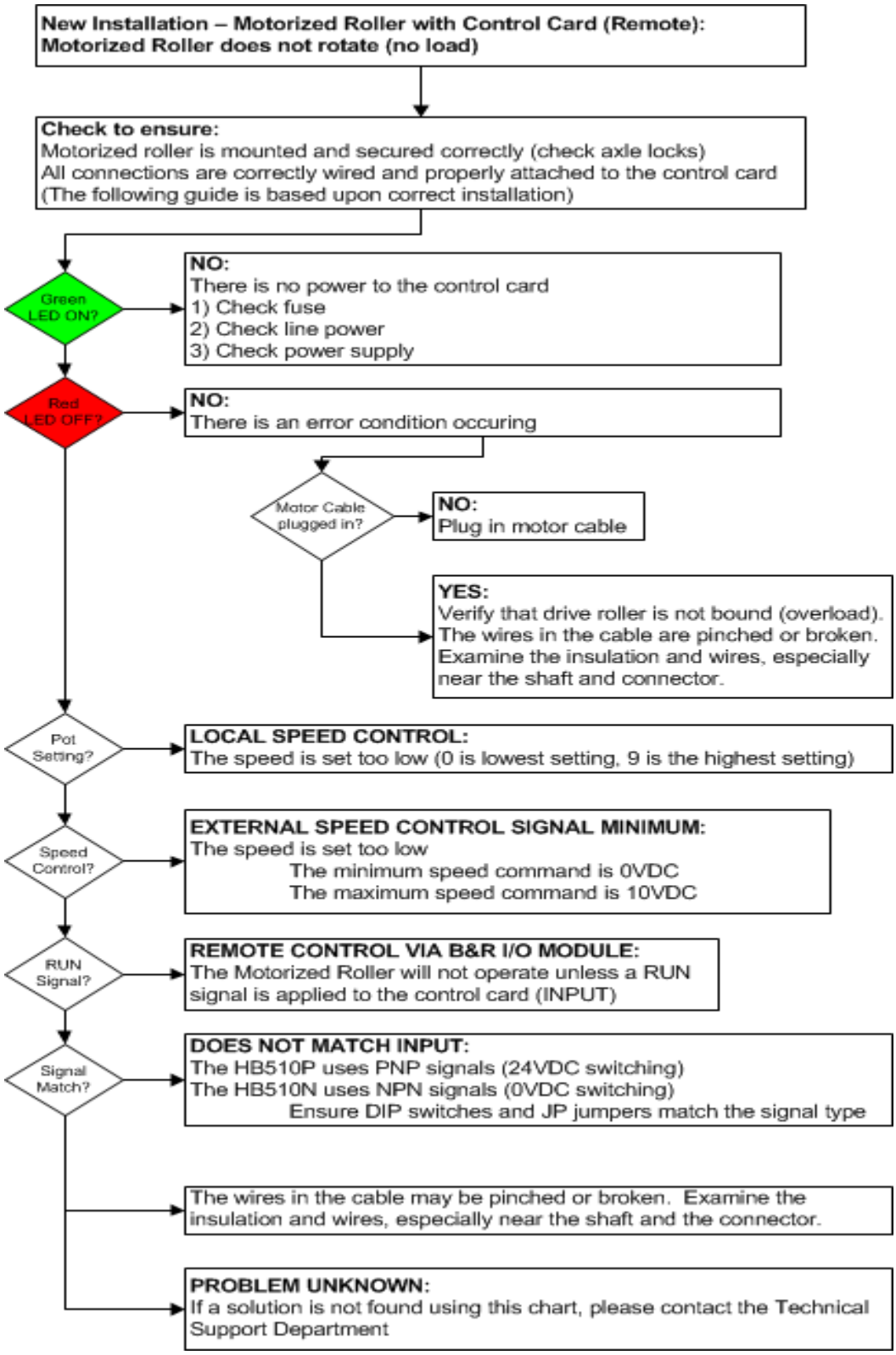
Figure	LED	Description		
Status indicator 1: left: green; right: red  Status indicator 2: left: green; right: red	Status indicator 1	Status indicator - X2X Link.		
		Green	**Red**	**Description**
		Off	Off	No supply via X2X Link
		On	Off	X2X Link supplied, communication is functioning
		Off	On	X2X supplied, but X2X communication is not functioning
		On	On	Preoperational: X2X Link supplied, module not initialized
	1 - 8	Input / output status of the corresponding channel. The LEDs are orange.		
	Status indicator 2	Status indicator for module function.		
		LED	**Status**	**Description**
		Green	Off	Module supply not connected
			Single flash	Reset mode
			Blinking	Preoperational mode
			On	RUN mode
		Red	Off	Module supply not connected or everything is OK
			On	Error or reset state
			Single flash	Warning/error for an I/O channel. Level monitoring for digital outputs has been triggered.
			Double flash	Supply voltage not in the valid range

5.3 B&R Power Supply Module (X2XPS1301)

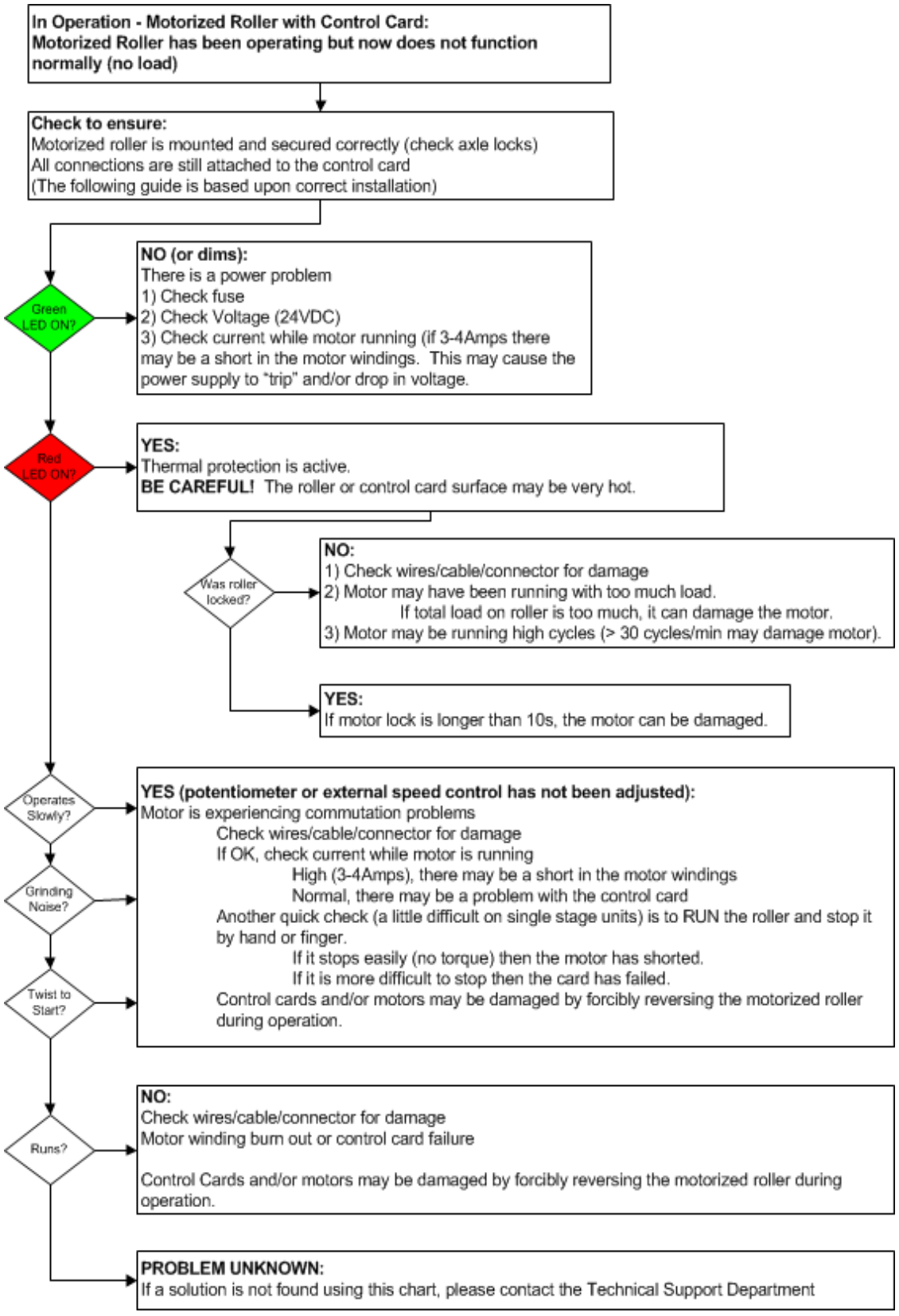
Figure	LED	Description
	Status indicator 1	Status indicator - X2X Link. The green LED is lit when the X2X Link supply is in the valid range.
	Status indicator 2	Status indicator for the module supply. The orange LED is lit when the module supply is in the valid range.

7.0 Roller Troubleshooting Decision Charts

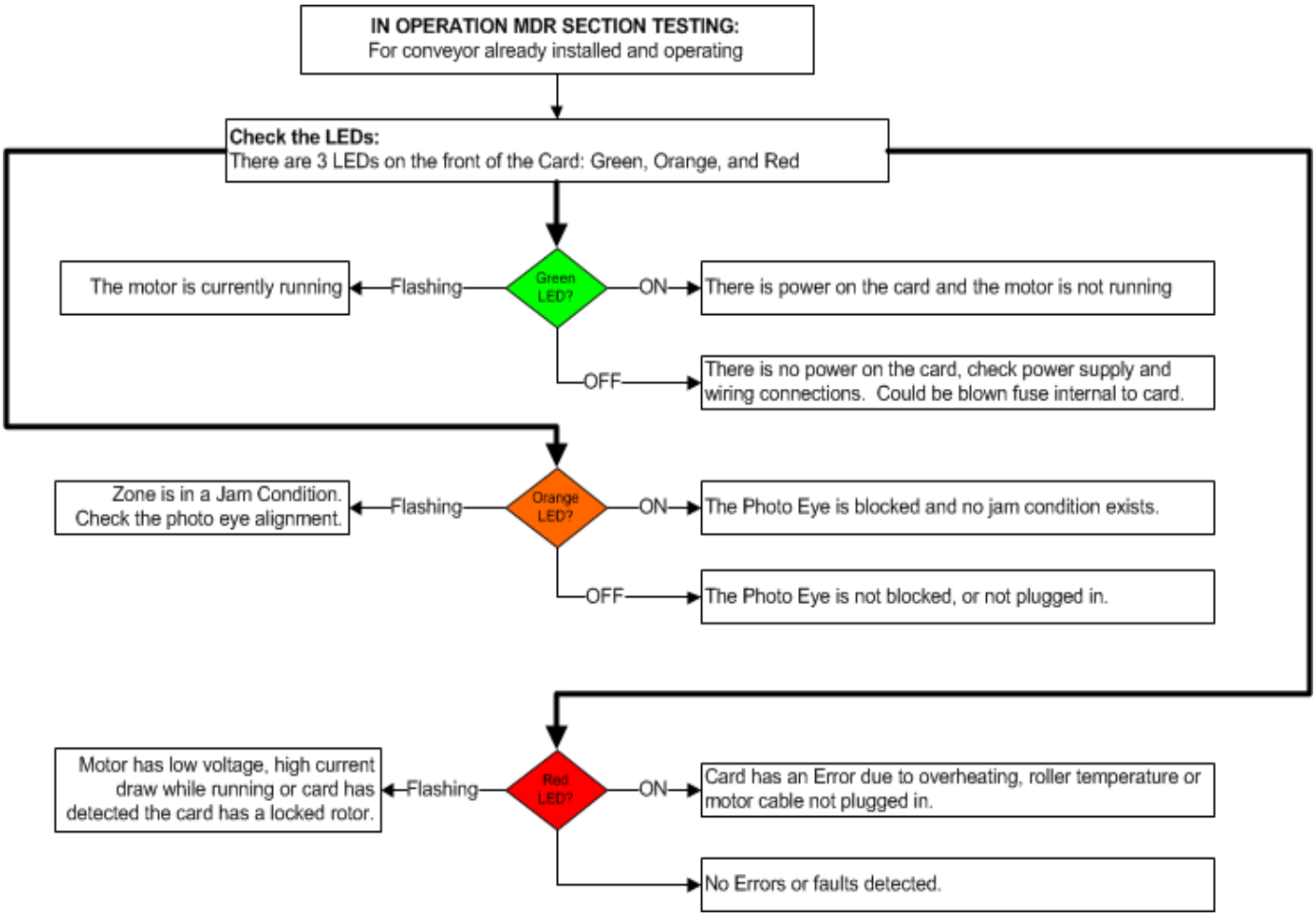
7.1 New Installation Troubleshooting



7.2 In Operation



7.3 In Operation – Quick Guide



Troubleshooting Help?

If you need further assistance, please visit our website at www.intelligrated.com or call the Intelligrated Customer Service Department at (877) 315-3400.