Kodak

Trendsetter AL and NEWS

Preloader Interface Specification

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1. DOCUMENT SCOPE

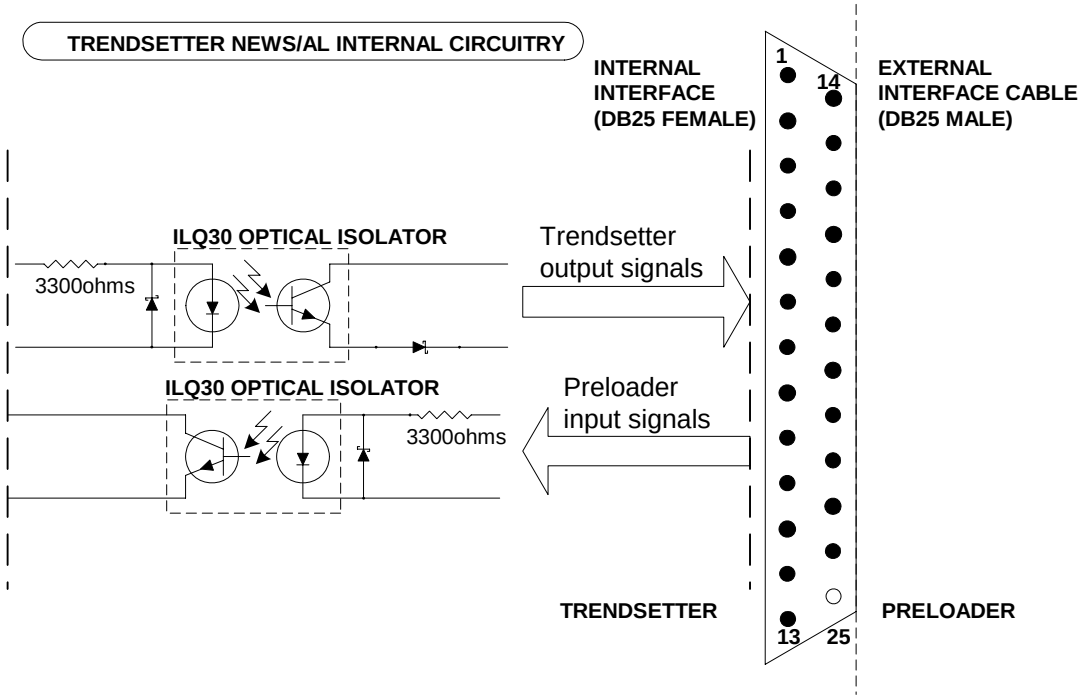
This document describes:

- The autoloader interface from the Kodak® Trendsetter® NEWS™ or Autoloader machine to the preloader plate-handling device
- Firmware requirements and operation
- Upgrade and connection procedure

2. ELECTRICAL SPECIFICATIONS

The interface board that contains the optical isolation stage is located inside the Trendsetter output device. The interface to the preloader is through a DB 25 connector (see Figure 1). The preloader cable to the Trendsetter must be a metal shell, strain relief, DB 25 male connector. A qualified service engineer is required to connect the device to the Trendsetter. All digital inputs from external devices are isolated through optical isolators. The optical isolator used is the ILQ30.

The working voltage of the interface is 5-24 volts DC. Each input requires a forward current drive equal to or greater than 1.5 mA but less than 60 mA.. Note that the diode input is current protected with a 3300 ohm resistor so it should not be possible to exceed 7.3 mA per input at 24 volts DC. The digital outputs are isolated by the phototransistor, which has a maximum collector current of 125 mA. Note this phototransistor is not protected from overcurrent. The emitter output is protected by a reverse protection diode.



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Figure 1: Trendsetter NEWS preloader electrical interface

3. SIGNAL DESCRIPTION

3.1 Trendsetter to Preloader

- CS_PWR ON+
  This signal is the collector of the photo sensor and switches when the Trendsetter is powered on. The optical isolator output has a maximum load current of 125 mA.

- CS_PWR ON–
  This signal is the emitter of the photo switch and has a reverse protection diode in series with the output.

- CS_FAULT+
  This signal is the collector of the photo sensor and switches when a Trendsetter fault is detected in the machine. The optical isolator output has a maximum load current of 125mA.

- CS_FAULT–
  This signal is the emitter of the photo switch and has a reverse protection diode in series with the output.

- CS_PCK CLR+
  This signal is the collector of the photo sensor and switches when the picker is clear. When the picker is down it is clear and the Trendsetter plate bay is able to accept plates. The optical isolator output has a maximum load current of 125 mA.

- CS_PCK CLR–
  This signal is the emitter of the photo switch and has a reverse protection diode in series with the output.

- CS_REQUEST+
  This signal is the collector of the photo sensor and switches when the Trendsetter requests the preloader to pick and load a single plate into the plate bay. The optical isolator output has a maximum load current of 125 mA.

- CS_REQUEST–
  This signal is the emitter of the photo switch and has a reverse protection diode in series with the output.

- SPARE 2+
  This signal is the collector of the photo sensor and switches when the Trendsetter digital signal changes states. The optical isolator output has a maximum load current of 125mA.

- SPARE 2–
  This signal is the emitter of the photo switch and has a reverse protection diode in series with the output.

- SPARE 3+
  This signal is the collector of the photo sensor and switches when the Trendsetter digital signal changes states. The optical isolator output has a maximum load current of 125mA.

- SPARE 3–
  This signal is the emitter of the photo switch and has a reverse protection diode in series with the output.

3.2 Preloader to Trendsetter

- NP_PWR ON+
  This signal is +5 to 24 volts DC switched high when the preloader is powered on. With the preloader plugged in this signal is normally high. This is the positive input for the LED in the optical isolator. The input requires a forward current drive equal to or greater than 1.5mA but less than 60mA. The diode input is current protected with a 3300 ohm resistor.

- NP_PWR ON–
  This signal is the return for the LED.

- NP_FAULT+
  This signal is +5 to 24 volts DC switched low when the preloader has an internal fault. This signal is normally high. This is the positive input for the LED in the optical isolator. The input requires a forward current drive equal to or greater than 1.5mA but less than 60mA. The diode input is current protected with a 3300 ohm resistor.

- NP_FAULT–
  This signal is the return for the LED.

- NP_LOADER+
  This signal is +5 to 24 volts DC switched low when the loader has moved into the Trendsetter bay to load a plate. The Trendsetter must not move the picker up. This signal switches high when the preloader has left the Trendsetter and the bay is free. This is the positive input for the LED in the optical isolator. The input requires a forward current drive equal to or greater than 1.5mA but less than 60mA. The diode input is current protected with a 3300 ohm resistor.

- NP_LOADER–
  This signal is the return for the LED.

- *NP_PLATE 1+
  This signal is +5 to 24 volts DC switched high when the loader selects a plate from this cassette. This signal may be used in combination with the other plate reference signals to create a table of plate sizes. This is the positive input for the LED in the optical isolator. The input requires a forward current drive equal to or greater than 1.5mA but less than 60mA. The diode input is current protected with a 3300 ohm resistor.

- *NP_PLATE 1–
  This signal is the return for the LED.

- *NP_PLATE 2+
  This signal is +5 to 24 volts DC switched high when the loader selects a plate from this cassette. This signal may be used in combination with the other plate reference signals to create a table of plate sizes. This is the positive input for the LED in the optical isolator. The input requires a forward current drive equal to or greater than 1.5mA but less than 60mA. The diode input is current protected with a 3300 ohm resistor.

- *NP_PLATE 2–
  This signal is the return for the LED.

- NP_IN PLACE+
  This signal is +5 to 24 volts DC switched high when the preloader is in place. This is the positive input for the LED in the optical isolator. The input requires a forward current drive equal to or greater than 1.5mA but less than 60mA. The diode input is current protected with a 3300 ohm resistor.

- NP_IN PLACE–
  This signal is the return for the LED.

- The preloader will provide the plate selection status signal. This signal will only be used if required by customers or to improve throughput. Creo will determine at a later date the need for this signal.

3.3 Preloader in Place Picker Solenoid Disconnect

- 10-5153A CAB,ASSY,SOLENOID PWR DISC,PRELOADER,TS:
  Cable connected from the interface bracket to the picker solenoid power disconnect. An external cable is required to complete the preloader in place loop.

- +24V: (CPC Cable Pin 1)
  The 24Vdc power for the picker solenoid is routed to the interface bracket where a cable disconnect is located. When the front door is open the Omron safety switch disconnects power to the picker solenoids to protect the operator from mechanical hazards. The preloader requires this door to be open to function properly. The best way to re-apply the 24Vdc power is to provide a set of contacts from the preloader that close when the preloader is in place. The 24Vdc power is sent out to the preloader and a signal 24VS returns when the contacts are closed and the preloader is in place.

- +24VS: (CPC Cable Pin 2)
  This signal is present when the preloader is in correct position and the preloader contacts are closed. The Trendsetter cable part # 10-5153A and is the same for MPE and MCE machines. This signal is in parallel with the standard safety loop so when the preloader is moved away and the door closed the picker solenoid is re-energized.

3.4 Trendsetter Internal Cable Connections

- 10-5094A CAB,ASSY,TEE(J22)-NPIF(J2),TS-A :
  Cable connected from the neutral preloader I/F board, J2 (10-5072A) to the TEE board, J22 located in the MPE version machine.
- 10-5095A CAB,ASSY,TEE(J5)-NPIF(J3)-TS-A :
  Cable connected from the neutral preloader I/F board, J3 (10-5072A) to the TEE board, J5 located in the MPE version machine.
- 10-5156A CAB,ASSY,GEN(J18)-NPIF(J2)-TSM:
  Cable connected from the neutral preloader I/F board, J2 (10-5072A) to the GENINE board, J18 located in the MCE version machine.
- 10-5157A CAB,ASSY,GEN(J5)-NPIF(J3)-TSM:
  Cable connected from the neutral preloader I./F board,J3 (10-5072A) to the GENINE board, J5 located in the MCE version machine.

3.5 Connector Signal Designation

1)	CS_PWR ON+	DB25	PIN 1
2)	CS_PWR ON–	DB25	PIN 14
3)	CS_FAULT+	DB25	PIN 2
4)	CS_FAULT–	DB25	PIN 15
5)	CS_PCK CLR+	DB25	PIN 3
6)	CS_PCK CLR–	DB25	PIN 16
7)	CS_REQUEST+	DB25	PIN 4
8)	CS_REQUEST–	DB25	PIN 17
9)	SPARE 2+	DB25	PIN 5
10)	SPARE 2–	DB25	PIN 18
11)	SPARE 3+	DB25	PIN 6
12)	SPARE 3–	DB25	PIN 19
13)	NP_PWR ON+	DB25	PIN 7
14)	NP_PWR 0N–	DB25	PIN 20
15)	NP_FAULT+	DB25	PIN 8
16)	NP_FAULT–	DB25	PIN 21
17)	NP_LOADER+	DB25	PIN 9
18)	NP_LOADER–	DB25	PIN 22

19) NP_PLATE 1+ DB25 PIN 10

20) NP_PLATE 1– DB25 PIN 23

21) NP_PLATE 2+ DB25 PIN 11

22) NP_PLATE 2– DB25 PIN 24

23) NP_IN PLACE 1+ DB25 PIN 12

24) NP_IN PLACE1– DB25 PIN 25

25) *NOT USED* DB25 PIN 13

The Trendsetter side of the connection will be a DB25 female connector. The neutral preloader will have a mating DB25 male connector.

3.6 Trendsetter News with MPE Electronics

The Trendsetter NEWS machine with the existing MPE electronics requires the following software I/O mapping to function properly with the preloader. The TEE board is the Trendsetter Engine Electronics board containing the I/O that will interface to the preloader. The autoloader I/O spares are already used for existing autoloader functionality so to add the interface signals the spectrum I/O will have to be used. The decision was made that the MPE version of Trendsetter does not have to support autoloader and spectrum options at the same time so the spectrum inputs can be used for autoloader.

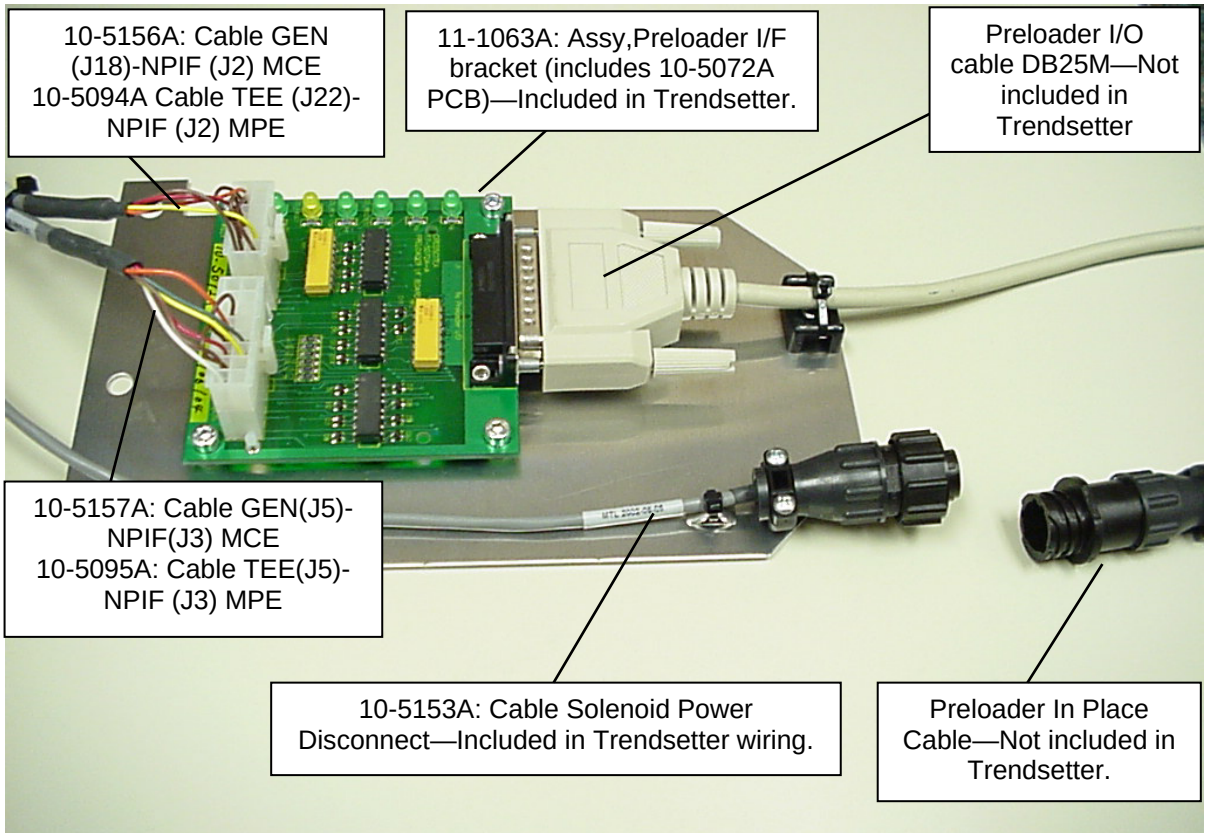
TEE BRD SIG NAME	I/F SIG NAME	BIT #	CONN	NOTES
CAS.AJ1	CS_PWR ON	BIT 0	J22	Signal output to preloader
VRL.4UP	CS_FAULT	BIT 1	J22	Signal output to preloader
ATP.SRL	CS_PCK CLR	BIT 2	J22	Signal output to preloader
VRL.DRM	CS_REQUEST	BIT 3	J22	Signal output to preloader
VRL.DRMS	NP_PWR ON	BIT 0	J5	Signal input from preloader
VRL.NEUS	NP_FAULT	BIT 1	J5	Signal input from preloader
VRL.CASS	NP_LOADER	BIT 2	J5	Signal input from preloader
CCR.DRMS	NP_PLATE 1	BIT 3	J5	Signal input from preloader only used if required.
CCR.NEUS	NP_PLATE 2	BIT 4	J5	Signal input from preloader only used if required.
CCR.VRLS	NP_IN PLACE	BIT 5	J5	Signal input from preloader

3.7 Trendsetter NEWS with MCE Electronics

The Trendsetter NEWS machine with the MCE electronics uses a GENINE board as the expansion for the autoloader and other accessories. The GENINE board has digital input capabilities and solenoid outputs that will be used for this interface. The following I/O list is the correct mapping for the interface.

GEN BRD SIG NAME	I/F SIG NAME	BIT #	CONN	NOTES
ACT 4+	CS_PWR ON	BIT 4	J18	Signal output to preloader
ACT 5+	CS_FAULT	BIT 5	J18	Signal output to preloader
ACT 6+	CS_PCK CLR	BIT 6	J18	Signal output to preloader
ACT 7+	CS_REQUEST	BIT 7	J18	Signal output to preloader
SENS 21	NP_PWR ON	BIT 21	J5	Signal input from preloader
SENS 22	NP_FAULT	BIT 22	J5	Signal input from preloader
SENS 23	NP_LOADER	BIT 23	J5	Signal input from preloader
HOME0.SENS	NP_IN PLACE	BIT 3	J14	Signal input from preloader
AWAY0.SENS	NP_PLATE 2	BIT 4	J14	Signal input from preloader only used if required.

4. COMPONENT LIST AND DESCRIPTION



4.1 Trendsetter MPE machine Preloader Kit (11-1139A)

- 11-1063A Assy, Preloader I/F Bracket with PCB
- 10-5094A Cab,Assy,TEE(J22)-NPIF(J2)
- 10-5095A Cab,Assy,TEE (J5)-NPIF (J3)
- 10-5153A Cab,Assy,Solenoid Power Disconnect

4.2 Trendsetter MCE machine Preloader Kit (11-1140A)

- 11-11063A Assy, Preloader I/F Bracket with PCB
- 10-5156A Cab,Assy,GEN(J18)-NPIF(J2)
- 10-5157A Cab,Assy,GEN(J5)-NPIF(J3)
- 10-5153A Cab,Assy,Solenoid Power Disconnect

4.3 Components Provided by the Preloader Supplier

- Preloader I/O Cable DB25M
  Standard male 25-pin D-sub shielded cable connecting the preloader digital I/O to the Trendsetter interface board. The cable length will be determined by the preloader supplier allowing the preloader to be easily moved out of the way for servicing the Trendsetter.

- Preloader in Place Cable
  CPC connector from AMP (part number 206153-1) free-hanging receptacle size 11 housing. Connector pins from AMP (part number 66400-3) 24-20 AWG wire size. Connector cable clamp from AMP (part number 206062-3) shell size 11 for cable size 8.36mm diameter. The preloader supplier will determine the cable used.

5. FIRMWARE REQUIREMENTS

Trendsetter NEWS firmware is required to support the preloader interface. The firmware used for the MPE machine is release 1.15 or higher and must include the functions listed in this document. The activation of the preloader option depends on the base machine and the firmware used. The MPE and the MCE machines use different firmware. Once the preloader option is enabled, the Trendsetter monitors the required signals of the preloader and the workstation reports any errors sent from the preloader.

Refer to the firmware flowchart for the operation of the Trendsetter and the preloader.