

U-04b1: Set Up/Adjust Feedback Device (Resolver Feeding PLC)

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Be aware of moving or rotating equipment.
- 480VAC may be present in the Control Panel.
- Use a flashlight if there is low lighting.

EQUIPMENT

- Autotech Resolver and Module
- Electrician's hand tools
- wiring cable

RESOURCES

- installation and operation manual for the resolver module MAN-RPXDU-000; manual for input module MAN-M8000-D360T
- electrical print

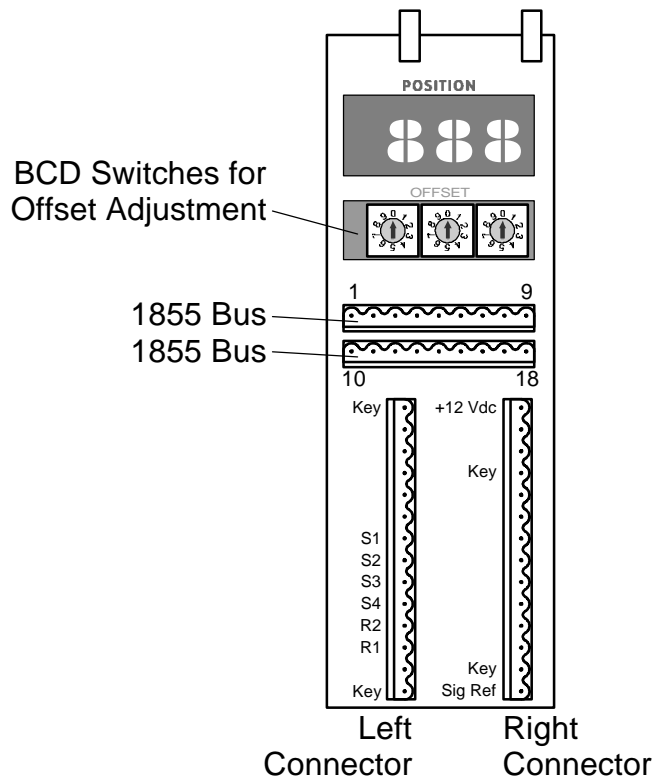
Set Up Resolver

Note: This is a new installation situation. The resolver has already been mounted and coupled to the machine by Machine Repair.

1. Install the resolver input module in the PLC rack.
 - Check the electrical print for the location of the module group specified by Engineering.
 - Check to ensure that the power to the chassis is off.
 - Push the module into the PLC rack until the module is securely seated in the backplane edge connector.

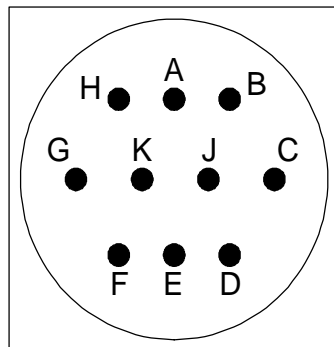
2. Wire the resolver and DC power to the input module.
 - Refer to the wiring instruction section of the installation and operation manual.
 - The module must be grounded to the control cabinet.
 - Refer to the following three figures for wiring information.

FRONT VIEW OF M8000-D360T MODULE





AUTOTECH RESOLVER CABLE				
Connection for 8105 Belden Cable		Connection for T.P.C. #61312 Cable		
Pin No.	Color	Pin No.	Color	Function
A	White/blue	A	Black	S4 Stator
B	Blue/white	B	Red	S2 Stator
C	White/Orange	C	Orange	S3 Stator
D	Orange/White	D	Blue	S1 Stator
E	White/Green	E	Green	R2 Rotor
F	Green/White	F	White	R1 Rotor
G	Shield	G	Shield	Ground
			Black/White	
			Red/Black	
			Orange/Black	
			Blue/Black	
			Green/Black	
			White/Black	



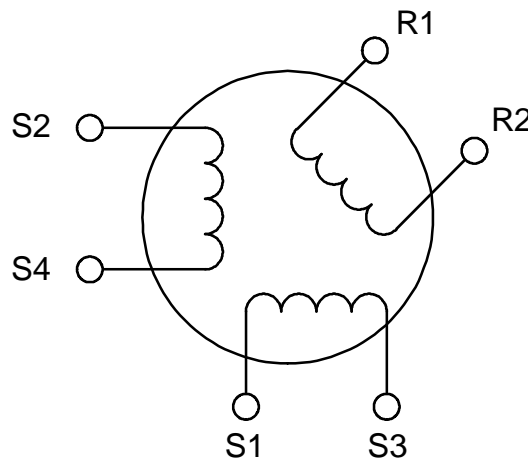
Connector MS3116F12-10S



RESOLVER INPUT MODULE CONNECTIONS	
M8000-D360T	
Left Connector	Right Connector
Key	Vs+ (+12 Vdc)
NC	NC
NC	NC
NC	Key
NC	NC
NC	NC
S1	NC
S2	NC
S3	NC
S4	NC
R2	NC
R1	NC
NC	Key
Key	Vs- (Sig Ref)
Note: 1. NC = Not Connected	

1855 BUS PIN OUT	
Pin No.	M8000-D360T
1	NC
2	Bit 1
3	2
4	4
5	8
6	10
7	20
8	40
9	NC
10	NC
11	80
12	100
13	200
14	400
15	800
16	Fault
17	Sig Ref
18	NC

3. Check to ensure that the resolver is set up to read in the designated direction.
- Determine the required direction. Ask the Machine Repairman to jog the machine in the forward direction. Observe the display for incremental numbers. The display is located inside the cabinet.
 - Change the setting to match the shaft rotation, if the display does not increment.
 - Remove the left front edge connector of the module and swap the stator windings.
 - Refer to the manufacturer's manual for information on wire locations and color coding. Swap S1 with S2, and S3 with S4. See the figure below.

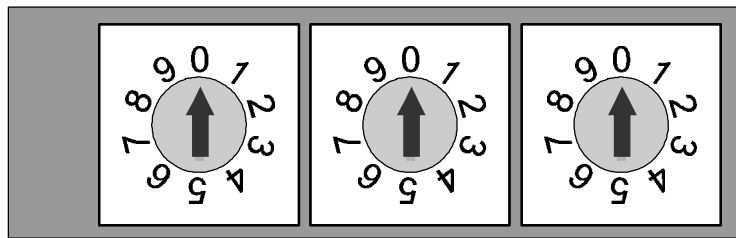


Swapped Stator Windings

4. Check the DIP switches on the resolver module for the correct configuration.
- Make sure that the power to the chassis is off.
 - Remove the resolver module from the rack to access the DIP switches.
 - There are twelve position DIP switches on the module. Refer to the installation and operation manual for the resolver module, for the dip switch location and configuration.
 - Reset the switches to match the recommended configuration, as necessary.
 - Return the module to the power rack slot. Ensure that the module is securely seated in the backplane connector.

- Restore power to the chassis.
 - The machine must be set on “top”.
5. Set the zero position on the resolver.
- Remove the offset switch cover from the input module to display the three rotary offset switches.
 - Using a small flathead screwdriver, set all three switches to zero position on the switch. See the figure below.

OFFSET



6. Set the module to read the zero position of the machine.
- The switches on the front provide a means of offsetting the indicated resolver shaft position without mechanically adjusting the position of the resolver shaft at the machine.
 - Read the LED value. This is the degree of revolution or “angle display.” See the example below. There should never be an angle offset greater than 360°. If an angle greater than 360° is displayed, the problem could be a faulty module. Be very careful when setting the offset angle.

POSITION



Example Angle Display

- Subtract the display value from 360°. The resulting value is the Offset Value. See the example below.

Display Value	$\begin{array}{r} 360^\circ \\ - 085^\circ \\ \hline \end{array}$	→	POSITION 085
Offset Value	275°		

- Using the offset switches, dial in the angle offset to read the zero position of the machine. This will not appear as zero on the display. Using 275° as the example, follow these steps:
 - a. Starting with the left rotary switch, rotate each switch the required exact number of “clicks.” For the example, turn the left switch two clicks clockwise. Do not adjust extra clicks if the numbers change.
 - b. Turn the middle switch seven clicks clockwise.
 - c. Turn the right switch five clicks clockwise.
 - d. If after turning the right switch five clicks, the display does not read “000”, adjust the switches for a “000” display. Rotate each offset switch one click clockwise or counterclockwise to obtain a reading of zero. The resolver module now reads the zero position of the machine.
7. Clean up the work area.
 8. Document the work history.