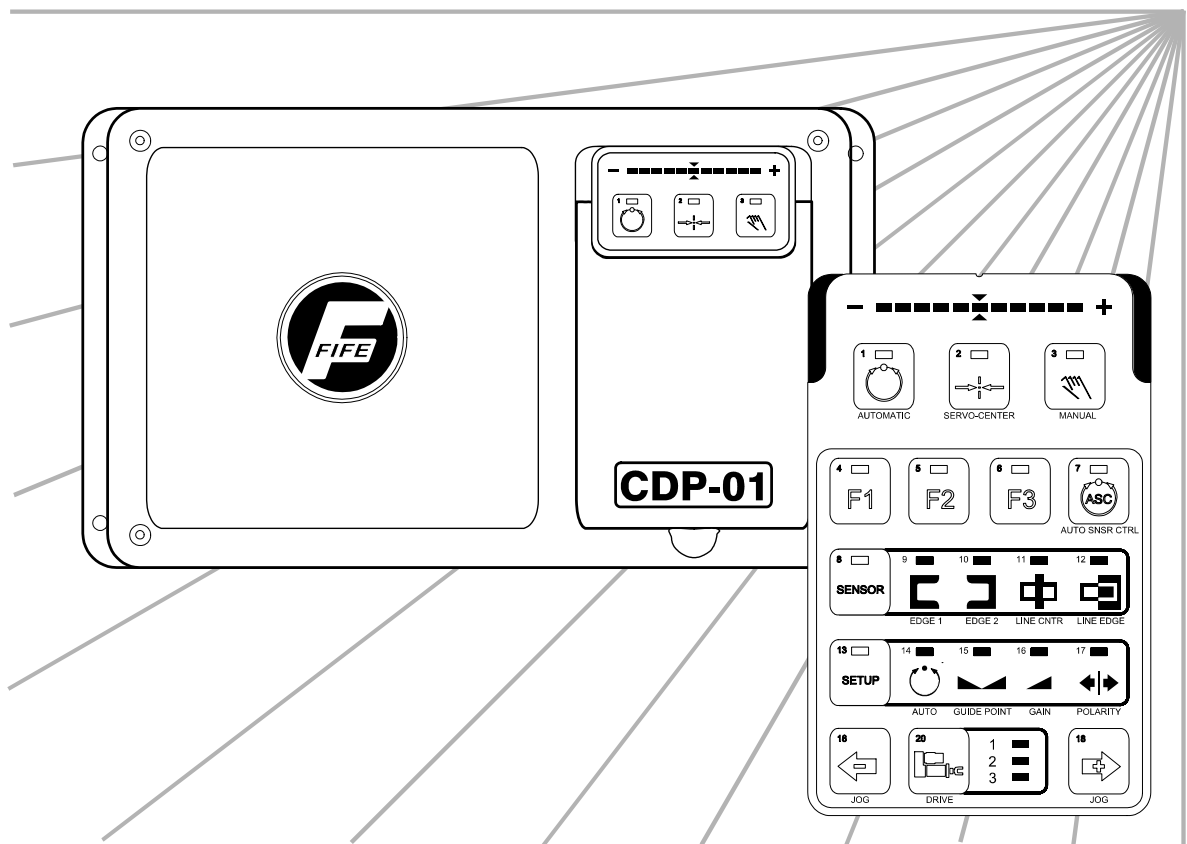




CDP-01

Additional Instruction Manual

For Using an SBPC-2X on a Moving Sensor Centerguide With Centerline Shift





COPYRIGHT

NOTE

These additional instructions explain the special features of the system delivered to the customer. They are intended for being used in conjunction with the CDP-01 Reference Manual. The CDP-01 Reference Manual applies except as noted to the contrary in these instructions.

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GENERAL INTRODUCTION

Application Description

The sensors are positioned manually or automatically over the edge of the web. The web is adjusted to the position of the sensor via the rotating frame. The material web can be shifted in edge and center guiding configurations. Internal (keypad) or External (SBPC-2X) control can be used.

Scope of application: edge and center guiding configuration systems with moving sensors, shifting web center point and internal or external control.

A CDP-01-MMM with FifeNet firmware is required for this application.

Software Part Numbers

The software part numbers are located on the side of the CDP-01 housing. They include the Matrix Setup no. (MS) , State Machine no. (SM) and firmware version (Dx).

CDP version: CDP-01-MMM

D1:565051-02x	MS: 100308.02x
D2:565052-02x	SM: 100309.02x
D3:565052-02x	FIFE USA

Please quote these details with all inquiries.

Connecting the System Components

The system components are to be connected according to the Cable Connection Diagram contained in the documentation.



SYSTEM CALIBRATION

Calibrating the Edge Sensors

The edge sensors are calibrated according to the 'CDP-01 Reference Manual' section 7-8 'Sensor Calibration with Edge Sensors' for sensors (LED 9 and LED 10).

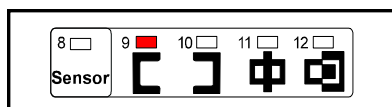
Adjusting the Encoders

The Protrac encoders should be adjusted according to the 'CDP-01 Reference Manual' section 9-2 'Defining Displacement Limts, Limiting Stroke' on all drives.

Adjusting Polarities and Gain

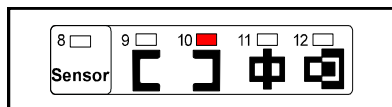
The Polarities and Gain should be adjusted according to the 'CDP-01 Reference Manual' section 7-16 'Changing the System Gain with the Web at Standstill' and section 7-16 'Changing the Guide Direction'.

The following operating modes are defined in this application.

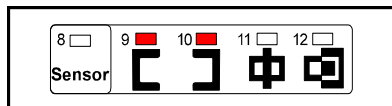


DRIVE 1

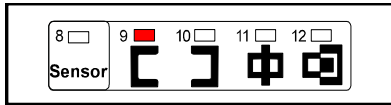
Left edge guiding configuration.



Right edge guiding configuration.

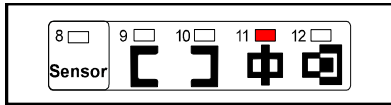


Center guiding configuration.

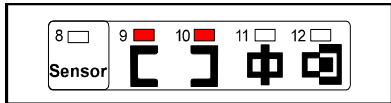


DRIVE 2

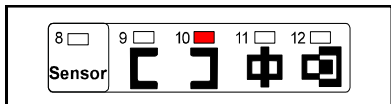
Sensor Seek for Left edge and Center guiding modes.



Left edge guiding configuration.

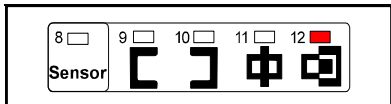


Center guiding configuration.

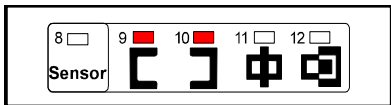


DRIVE 3

Sensor Seek for Right edge and Center guiding modes.



Right edge guiding configuration.



Center guiding configuration.



Operator Control Options

The CDP-01 signal amplifier can be operated by way of the CDP-01 control panel (internal operation) or via the SBPC-2X (external operation).

The symbols below are used for the various operator control options in the following:

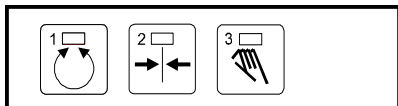


Internal operation

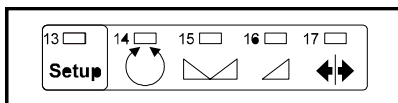


External operation

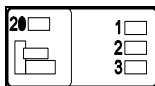
Special Features of External Control



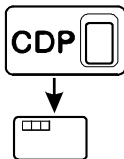
When the operation modes are being controlled via external control, the Automatic, Servo-Center, Manual keys of the CDP-01 control panel are disabled.



Changing mode via external activation is only possible when the *SETUP* function is deactivated on the internal control panel.



If the External commands are sent for 'Manual - Rotating frame' or 'Manual - Sensor positioner' modes, the drive selector key is disabled or locked.



If the cable to the serial port (-X8) of the CDP-01 is disconnected, the CDP-01 will lock up.



External Control

The table below shows the configuration mapping for data traveling from a Network to FifeNet.

Network to FifeNet Data			
Scheduled Data Word Source ₁	Data Type ₂	Variable	Description
0	WORD	Device 1 Command ₃	Network commands sent to the CDP-01. Simulated key presses, etc.
1	WORD	Control Matrix	Used to control the CDP-01 in accordance with the control matrix.
2	WORD	SM Command	Used to send special commands to the CDP-01.
3	INT	Value	Value used by the SM Command
4	WORD	[2] Reserved	
5	WORD	[3] Reserved	
6	WORD	[4] Reserved	

- 1 = All data words are 16 bits.
- 2 = Data Types:
 - * INT 16-bit signed value in the range of -32,768 to +32,767.
 - * WORD 16-bit unsigned value in the range of 0 to 65,535.
- 3 = Commands to the CDP-01.

Scheduled Data Words 2 & 3 are used to change the Guidepoint in the CDP and set the Jog Speed. To function properly, they must be used in conjunction with each other as noted below.

• **Data word 2** (SM Command) selects command. The commands are a four (4) digit Hex number, which are sent on scheduled data word **SM Command**. The first two (2) digits are the commands. The fourth digit chooses the drive. The table below explains this command using a 4 digit Hex number.

• **Data word 3** (Value) controls the amount of offset and the speed of the Jogs. The range for the Guidepoint is -32768 to +32767. Note: the guidepoint shift value is a shift amount and not a position. The sign determines the direction. The range for the Jog Speed is 0 to +32767 with a default value of 16383 (50%).

Calibration Commands (SM Command)		
X X = Command	X = Parameter 1	X = Parameter 2
0 1 = Guidepoint Shift	0	1 = Fine shift (within bandwidth of sensor) 2 = Course shift (shift sensors on the positioner)
0 8 = Jog Speed	0	1 = Drive 1 2 = Drive 2 3 = Drive 3

The recommended use is to set the Value while the SM Command is zero (0). Then select the command with the SM Command. As soon as the CDP-01 receives the command signal, it will immediately send the command back on scheduled Data Word 11 (SM Command Feedback) for 'hand shaking'.



Control Matrix

COMMAND VIA NETWORK	HEX
Lockout (X7 only)	01
Manual – Rotating frame	06
Manual – Sensor positioner (D2)	0A
Manual – Sensor positioner (D3)	02
Automatic	08
Servo-center	04
Auto-Lock	0C
Left – Rotating frame (D1)	16
Right – Rotating frame (D1)	26
Left – Sensor positioner (D2)	1A
Right – Sensor positioner (D2)	2A
Left – Sensor positioner (D3)	12
Right – Sensor positioner (D3)	22
Sensor Selection – Edge Right	40
Sensor Selection – Edge Left	80
Sensor Selection – Edge Center	C0



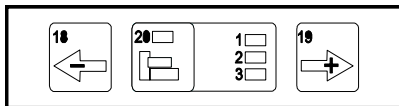
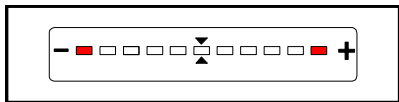
Explanation of the Operating Modes

NOTE: All Start-up Procedures must be performed before Automatic and Servo Center modes are used.

LOCKOUT



'Lockout



Set lockout.

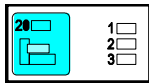
Note: 'LOCKOUT' mode can only be set via the parallel port.

The rotating frame and the sensor positioner are locked.

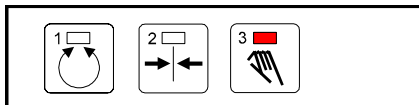
Check: left and right LEDs of the LED bar and LED for drive 1 flash.

Note: lockout is only effective in 'AUTOMATIC' mode.

MANUAL – Rotating Frame



'Manual - Rotating frame'



Press key 3, and if necessary, the drive selector key until the LED for drive 1 lights up or select 'Manual-Rotating frame' via external control.

The sensor positioner and the rotating frame are switched to Manual.

Check: LED (3) lit.

Setup functions can be performed and sensor modes selected, if desired.

Press the - or + key to set 'Left' or 'Right' to manually alter the position of the drive.

Note: with External control, 'Left-Rotating frame' or 'Right-Rotating frame' mode must be set.



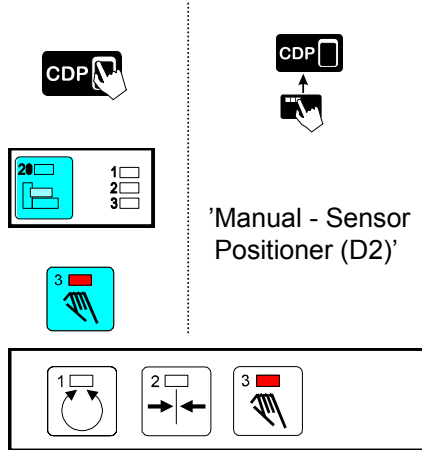
'Left'



'Right'



MANUAL – Sensor Positioner



'Manual - Sensor Positioner (D2)'

Press key 3, and if necessary, the drive selector key until the LED for drive 2 lights up or select 'Manual-Sensor Positioner (D2)' via external control.

The sensor positioner and the rotating frame are switched to Manual.

Check: LED (3) lit.

Setup functions can be performed and sensor modes selected, if desired.

Press the - or + key to set 'Left' or 'Right' to manually alter the position of the drive.

Note: with External control, 'Left - Sensor positioner (D2)' or 'Right - Sensor positioner (D2)' mode must be set.

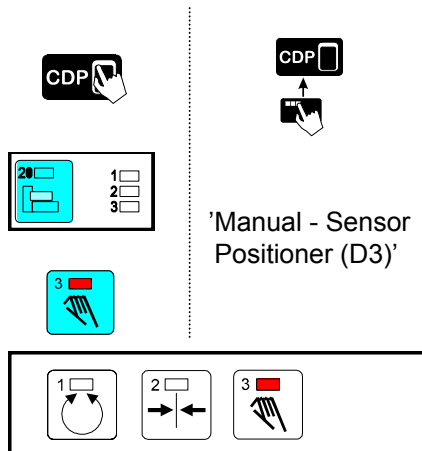


'Left'



'Right'

MANUAL – Sensor Positioner



'Manual - Sensor Positioner (D3)'

Press key 3, and if necessary, the drive selector key until the LED for drive 3 lights up or select 'Manual-Sensor Positioner (D3)' via external control.

The sensor positioner and the rotating frame are switched to Manual.

Check: LED (3) lit.

Setup functions can be performed and sensor modes selected, if desired.

Press the - or + key to set 'Left' or 'Right' to manually alter the position of the drive.

Note: with External control, 'Left - Sensor positioner (D3)' or 'Right - Sensor positioner (D3)' mode must be set.



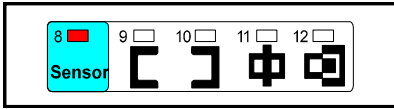
'Left'



'Right'



AUTOMATIC

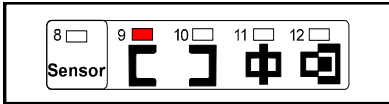


Select the sensor mode.

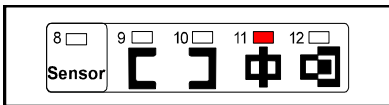
Note: only possible in the 'Manual - Rotating frame' or 'Manual - Sensor positioner' or 'Servo-center' modes.

Left Edge Guiding

Drive 1 – Edge Left



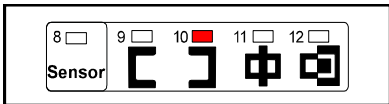
Drive 2 – Line Center



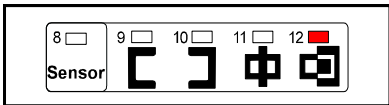
or

Right Edge Guiding

Drive 1 – Edge Right



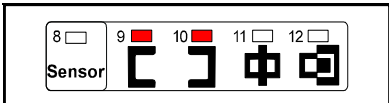
Drive 3 – Line Edge



or

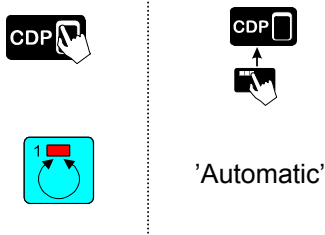
Center Guiding

Sensor configuration all three drives.

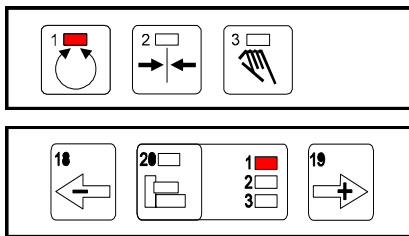




AUTOMATIC – Edge Guiding



Press key 1 or select 'Automatic'.



The sensor is automatically positioned over the edge of the web.

The panel is set to drive 1.

The system adjusts the edge of the material web to the sensor position.

Position the sensor with External control using the Guidepoint Shift command.

The system gain (control sensitivity) of the rotating frame can be changed.

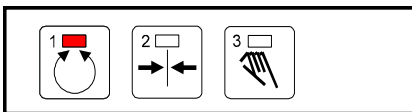


AUTOMATIC – Center Guiding configuration

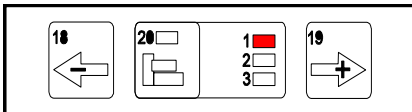


'Automatic'

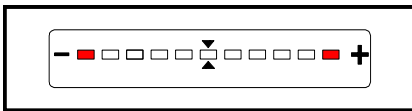
Press key 1 or select 'Automatic'.



The sensors search for the edge of the web.

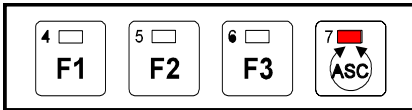


The panel is set to drive 1.



During the edge search, the rotating frame is in the 'Automatic' mode. The ASC function is activated.

Check: LED 7 and the two outer LEDs of the LED bar flash.



When one of the sensors finds the web, the rotating frame is enabled and the web is slaved until the second sensor has found the opposite edge of the web.

Note: LED 7 lights up constantly, while the outer LEDs of the LED bar no longer flash.

The sensor positioner and the rotating frame are in the Automatic mode. The sensors adapt to a fluctuating web width.

If the search detects no web, or if the web tears during guiding, the sensors reach their inner extreme position. The system switches to 'Servo-center' mode.

Note: the error must be acknowledged by selecting the 'Servo-center' mode.

The system adjusts the edge of the material web to the sensor position.

Position the sensor with External control using the Guidepoint command.

The system gain (control sensitivity) of the rotating frame can be changed.

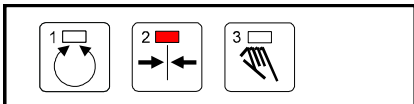


AUTO-LOCK

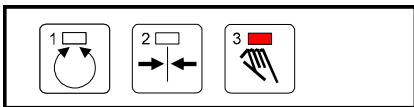


'Auto-Lock'

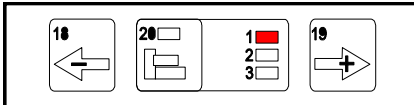
Set Auto-Lock.



The sensors move to their parked position.



The rotating frame is switched to Manual.



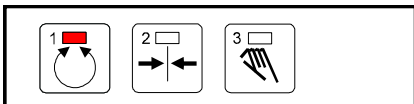
The panel is set to drive 1.

AUTOMATIC – After Auto-Lock



'Automatic'

Set Automatic.



The sensors search for the edge of the web, then move to the same position prior to 'Auto-Lock'.

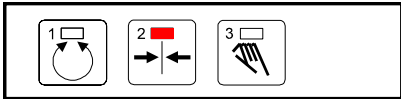


SERVO-CENTER



'Servo - center'

Press key 2 or select Servo-center.



The sensors move to their parked position. The rotating frame moves to the center position.

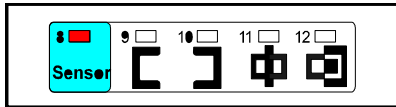
Check: LED 2 lit.

The sensor mode can be changed in this mode of operation.



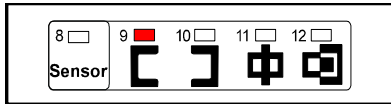
Sensor Selection – Sensor Indicator

A sensor can be selected in the ‘Manual - Rotating frame’ or ‘Manual - Sensor positioner’ or the ‘Servo-center’ mode, regardless of the displayed drive.



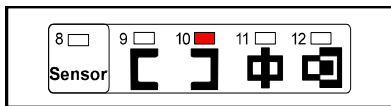
Press the sensor key until the required sensor mode is indicated.

The following sensor modes are allowed:



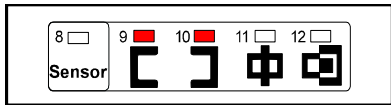
DRIVE 1
Left edge guiding configuration.

DRIVE 2
Left edge seek mode.

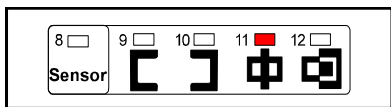


DRIVE 1
Right edge guiding configuration.

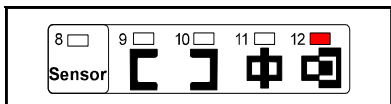
DRIVE 3
Right edge seek mode.



DRIVES 1, 2 & 3
Center guiding configuration.



DRIVE 2
Left edge guiding configuration.



DRIVE 3
Right edge guiding configuration.



An incorrect setting on the CDP-01 is often the cause for incorrect or unwanted guiding characteristics. Faults and the procedures for rectifying the faults are described in more detail in the CDP-01 Reference Manual, *Chapter 'Frequent Setting Errors'*. Application-specific faults are explained below.

Fault Diagnosis - Fault Rectification

Fault: The sensors move in the wrong direction during the web edge search.

Remedy: Select 'Manual - Sensor positioner' and change the polarity (guide direction) for the corresponding sensor mode.

Reference: *CDP-01 Reference Manual, Section: "Changing the Guide Direction"*

Fault: The rotating frame moves in the wrong direction in Automatic mode.

Remedy: Select 'Manual - rotating frame' and change the polarity (guide direction) for the corresponding sensor mode.

Reference: *CDP-01 Reference Manual, Section: "Changing the Guide Direction"*

