Flexible modular design is the key to trouble-free web tension control!

The MCS2000 Digital Web Tension Controller handles all winding and unwinding applications, either brake or motor operated.

Difficult setups with potentiometer adjustments are no longer a problem. The MCS2000 Web Tension Controller is easily programmed with only four push buttons on a panel-mounted programmer; a handheld programmer; or a Windows driven software package. All programmers employ a simple menu driven format. The unit can also "talk" to a PLC via the RS232 cable.

The power supply AC input auto-ranges from 95 to 264 VAC to avoid any match-up problems. The unit can be used in both open-loop and closed-loop systems. It can also be configured in an "open plus super-imposed/ closed-loop design for very precise tension control applications.

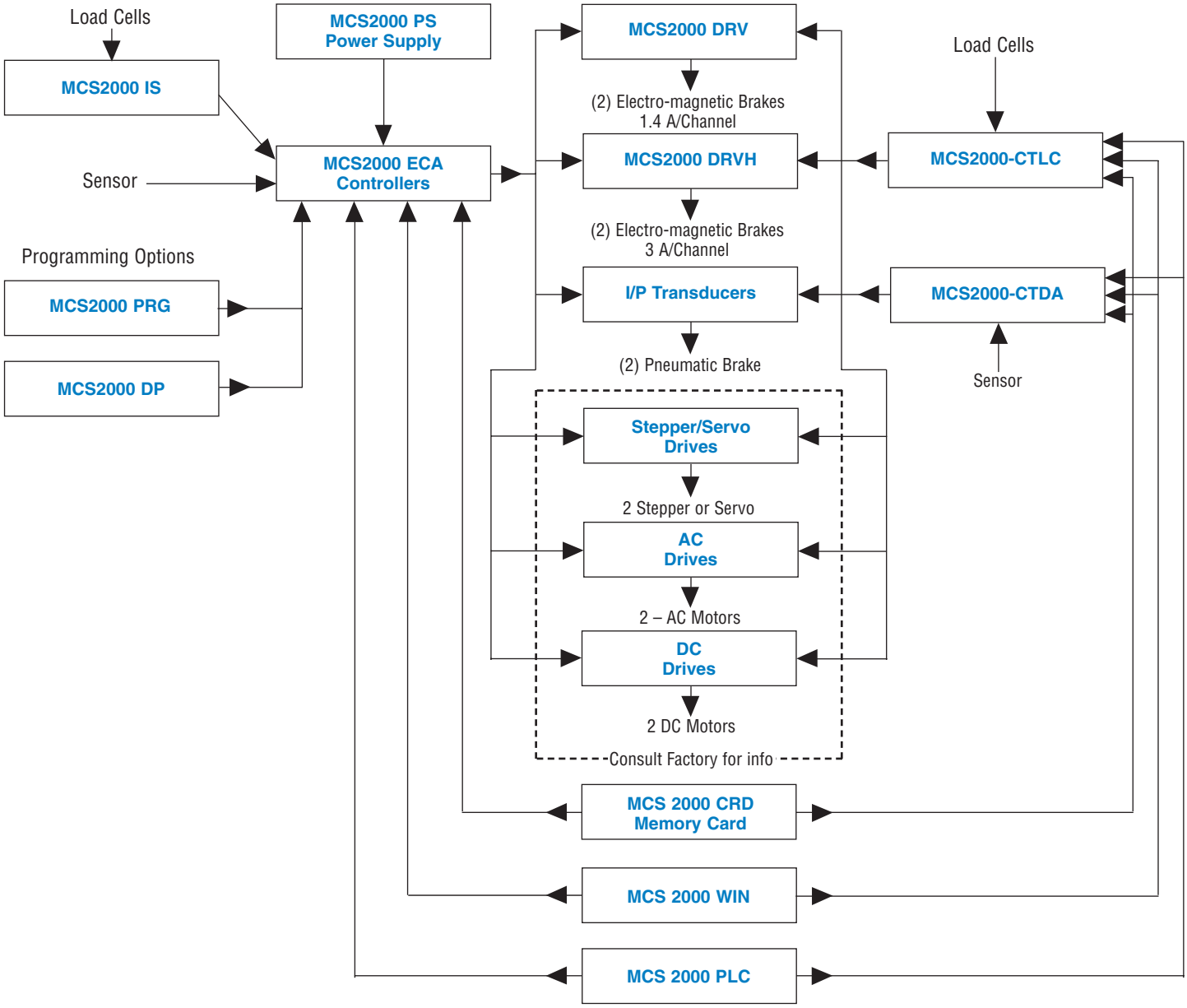
Two types of amplifiers are available for powering electro-magnetic brakes. The amplifiers have outputs for controlling two high-power brakes at 1.4 or 3 Amps per channel, continuous for each brake.

The MCS2000 modules are housed in metal enclosures designed for snap-fit assembly, eliminating screw attachment (patent applied for). All components are on printed circuit boards. Wiring connections are made with quick-disconnect screw terminals.

Features

- Modular system
- Easy to program
- Plug-in memory card for saving parameters
- Programmable in English or French
- PLC compatible
- Optically isolated inputs and outputs
- Dual output in either current or voltage operation mode
- Auto scaling of sensors
- Capable of open-loop operation with an ultrasonic sensor
- Splicing capability
- Windows programming software
- Automatic voltage range of AC input (95-264 VAC)
- Short-circuit protection
- Quick-disconnect wiring terminals
- Capable of controlling dual channel rewind or unwind
- Automatic PID correction - from analog inputs
- 2 x 16 backlit LCD display for programming and parameter readout

Modular Configurations



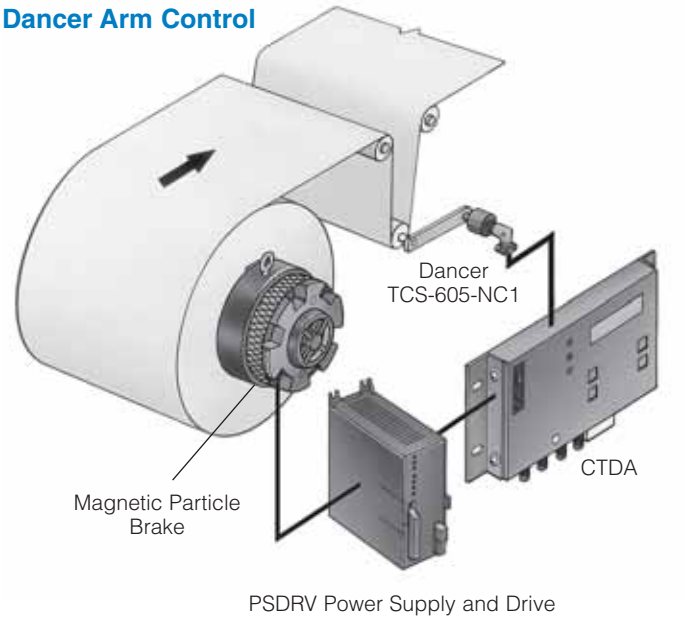
Ordering Information

Model	Feature	Part Number
MCS2000-CTDA	Closed loop dancer arm controller	6910-448-120
MCS2000-CTLC	Closed loop load cell controller	6910-448-121
MCS2000-ECA	Digital programmable controller	6910-448-096
MCS2000-WIN	Windows software	6910-101-096
MCS2000-PS	24 VDC power supply	6910-448-091
MCS2000-DRV	Dual channel 24 VDC driver	6910-448-092
MCS2000-DRVH	Dual channel 48 VDC driver	6910-448-095
MCS2000-PSDRV	24 VDC Power supply & 24 VDC driver	6910-448-093
MCS2000-PSDRVH	24 VDC Power supply & 48 VDC driver	6910-448-094
MCS2000-PSH	48 VDC Power supply, 6 AMP	6910-448-098
MCS2000-PSHA	48 VDC Power supply, 12 AMP	6910-448-088
MCS2000-IS	Dual load cell amplifier	6910-101-092

Model	Feature	Part Number
MCS2000-PRG	Handheld programmer	6910-101-090
MCS2000-CRD	Memory card	6910-101-091
MCS2000-DP	Panel mount programmer	6910-101-093
MCS2000-CBL	RS232 cable	6910-101-095
I/P Transducer	0-120 PSI	6910-101-066
Static Switch	Solid state switch	6910-101-007
TCS-605-1	1 turn pivot point sensor (1K)	7330-448-002
TCS-605-5	5 turn pivot point sensor (1K)	7330-448-003
Coupling	Intermittent motion sensor coupling	6910-101-001
Ultrasonic Sensor	4-40" sensing distance	7600-448-001
Ultrasonic Sensor	8-80" sensing distance	7600-448-002

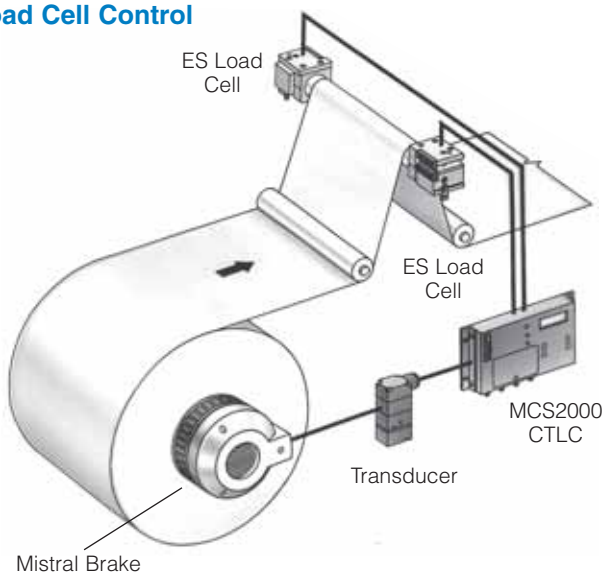
Application Examples

Dancer Arm Control

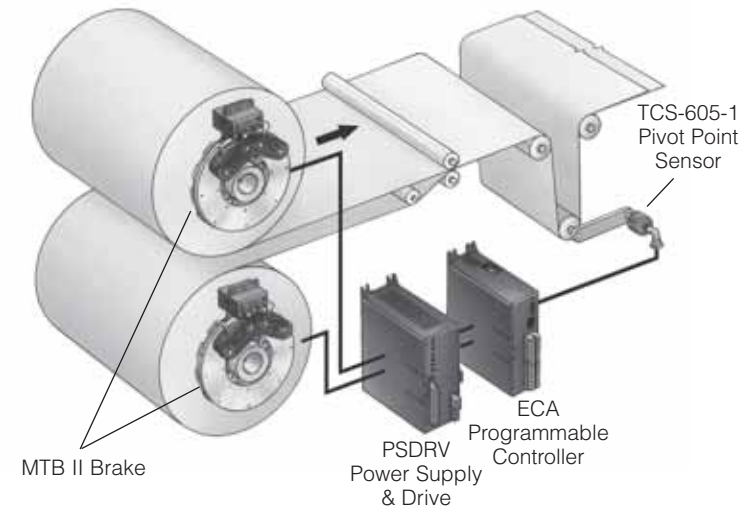


PSDRV Power Supply and Drive

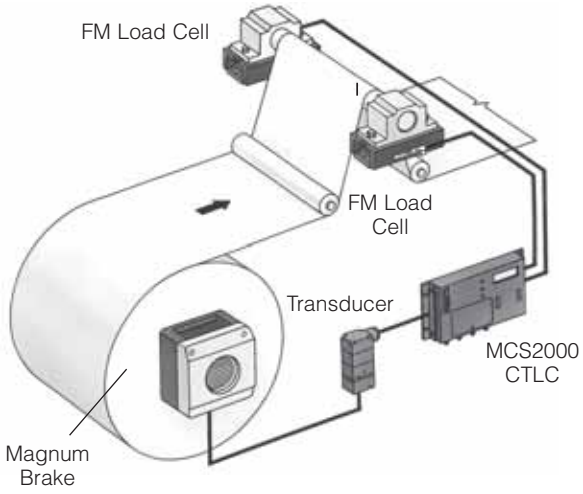
Load Cell Control



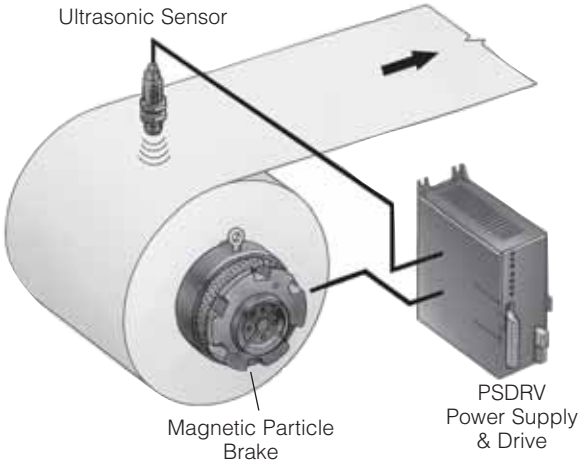
Closed Loop (Dancer Arm) Dual Unwind



Closed Loop (Load Cell) Unwind



Open Loop (Ultrasonic Sensor) Unwind



Closed Loop Control

MCS2000-CTDA
Dancer arm feedback
(P/N 6910-448-120)

MCS2000-CTLC
Load cell feedback
(P/N 6910-448-121)

Both units have especially been designed for user applications. They include all functions for web tension control. The units are equipped with standard power supply, controller front face keyboard and display. The CTLC unit is provided with 2 load cell inputs with selectable sensitivity from 10 mV to 10 V, compatible with most sensors on the market.

Applications
For every web or wire tension control application. Applicable regardless of controlling device (air brake, electric brake or motor).

Common Features
- Scaleable tension readout
- Password protected
- 8 different output options
- Fully digital
- Multi-purpose
- RS232 communications
- Memory card for storing up to 2 full programs
- Windows programming software
- Integral terminal reset
- 2 output channels
- Automatic sensor scaling
- External set point change
- Programmable output configuration
- Output sensor information
- Automatic or imposed PID correction
- Taper Tension Available on other models
- Manual/Auto Operation per front panel pushbutton

MCS2000-WINDOWS
(P/N 6910-101-096)

The Windows programming software package is an icon driven interface for easy setup and parameter changes to the control. It is compatible with any PC running under Windows 3.1 or above. The software can be run under two different modes: demo or connected. The demo mode allows software use without being connected to the control. In the connected mode, the PC and the MCS2000 control must be connected through the RS232 cable.

Specifications

Input Power/Output Power

Input supply	110-240 VAC, switch selectable
Ref. Output	10 VDC, 10mA max.
Sensor Output	±15 VDC, 100mA max.

Performance

Analog input/output resolution	12-bit ADC/DAC, 4096 steps

Analog Inputs

2 analog inputs	0–10 VDC, can be increased upon request (consult factory)
Sensor input	Range: ±10 VDC, delta min. of 4 VDC

Analog Outputs

2 output channels	0–±10 VDC or 0–20mA software adjustable
Brake Power Supply	For use with brake systems, requires power supply/driver module. (See page 51)
Open loop signal output	0–10 VDC, 10mA max.
Digital Inputs	(Activated by connecting the input to ground. Inputs are optically isolated if a separate external 24 VDC supply is used.) Set point adjustment Signal multiplier Open & closed-loop Limit output Integral reset Synchronize ABC input change ABC binary inputs
Digital Outputs	2 binary outputs for sensor error indication
Programming Options	Personal computer or PLC through RS232 cable
Display Options	(Can display 2 parameters on any of the programming options listed.) Set point — Output 1 Sensor value — Output 2 Analog 1 input — Error sensor 1 Analog 2 input — Error sensor 2 PID adaptation IN# for state of digital inputs
Indicator	Green power LED indicator on switch Output 1, 2: Green: 0 + 10 DC Red: 0 - 10 DC Out Window Indication Green: out of limits
Adjustments	Setpoint + Setpoint – Auto/Manual

Saving Options

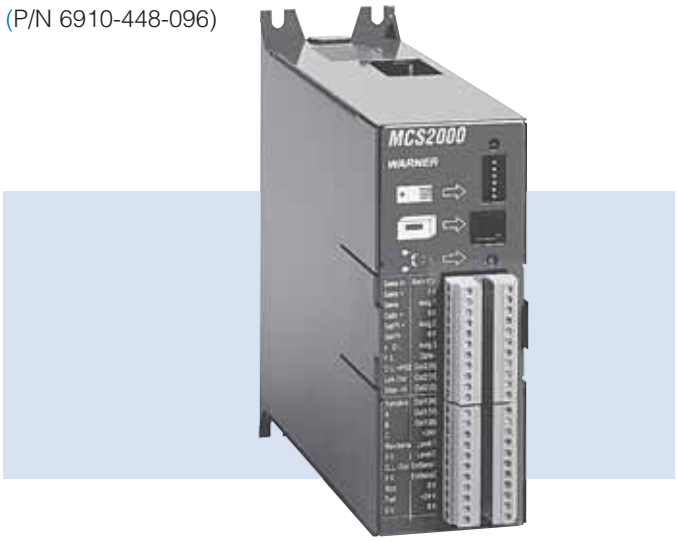
Controller stores one full program. Memory card stores two full programs.

Switching Inputs

Electro-mechanical, rated 24 VDC

Solid state, rated 40 VDC, minimum

MCS2000-ECA
(P/N 6910-448-096)



Digital Controller

The MCS2000-ECA is a digital tension controller that can be used in both open-loop and closed-loop systems. It can also be configured as an "open plus superimposed closed-loop" for very precise tension control.

Features

- Programmable output options
- Fully digital
- RS232 communications
- Memory card for storing up to 2 full programs
- Windows programming software
- Integral terminal reset
- 2 output channels
- Automatic sensor scaling
- External set point change
- Digital outputs from sensor input value

Specifications

Input Power/Output Power

Input Supply	24 VDC
Ref. Output	10 VDC, 10mA max.
Sensor Output	±15 VDC, 100mA max.

Performance

Analog input/output resolution	12-bit ADC/DAC, 4096 steps

Analog Inputs

2 analog inputs	0–10 VDC, can be increased upon request (consult factory)
Sensor input	Range: ±10 VDC, delta min. of 4 VDC

Analog Outputs

2 output channels	0–±10 VDC or 0–20mA software adjustable
Open loop signal output	0–10 VDC, 10mA max.

Digital Inputs	(Activated by connecting the input to ground. Inputs are optically isolated if a separate external 24 VDC supply is used.) Set point adjustment Signal multiplier Open & closed-loop Limit output Integral reset Synchronize ABC input change ABC binary inputs Inverse sensor polarity
Digital Outputs	2 binary outputs for sensor error indication
Programming Options	Personal computer or PLC through RS232 cable
Display Options	(Can display 2 parameters on any of the programming options listed.) VIA MCS2000-DP or MCS2000-PRG Set point Sensor value Analog 1 input Analog 2 input Output 1 Output 2 IN# for state of digital inputs Error sensor 1 Error sensor 2 PID adaptation
Indicator	Green power LED indicator

Saving Options	**Switching Inputs**
Controller stores one full program.	Electro-mechanical, rated 24 VDC
Memory card stores two full programs.	Solid state, rated 40 VDC, minimum

MCS2000-PS
(P/N 6910-448-091)

Power Supply

The MCS2000-PS Power Supply is designed to provide +24 VDC to the MCS2000-ECA Programmable Controller and/or the MCS2000-DRV module. If your system requires a 24 VDC power supply and an electro-magnetic brake driver, these components are available as a single package (MCS2000-PSDRV).

The packaged unit has the same features and specifications as the MCS2000-PS and MCS2000-DRV units alone.

Features

- Auto-ranging AC input
- Short circuit and overload protection
- Quick-disconnect terminals

Specifications

Input Power/Output Power

Input supply	110-230 VAC, ±15%, 50/60 Hz
Output supply	+24 VDC, 3.1A

MCS2000-PSH

Input supply	95-264 VAC, ±10%,
Output supply	48 VDC @ 6 Amps, 6910-448-098

MCS2000-PSHH

Input supply	95-264 VAC, ±10%,
Output supply	48 VDC @ 12 Amps, 6910-448-088

MCS2000-DRV, -DRVH, -PSDRV
(P/N 6910-448-092, 6910-448-095, 6910-448-093)

MCS2000-PSDRVH
(P/N 6910-448-094)

Drivers

MCS2000-DRV

This module serves as a dual-channel 24 VDC driver for two electro-magnetic brakes at 1.4 amps per channel. This module requires a separate 24 VDC power source for operation.

MCS2000-DRVH

This module serves as a high voltage dual channel 48 VDC driver for two electro-magnetic brakes at 3.0 amps per channel steady state, 6 amps peak for overcurrent. This module requires a separate 48 VDC power source for operation.

Power Supply/Drivers

MCS2000-PSDRV

Single package module with both power supply and dual channel driver in a single enclosure. This module can be used to power the MCS2000-ECA and operate two electro-mechanical brakes up to 1.4 amps/channel for closed-loop operation. For open-loop operation the module can be operated as a stand alone power supply driver.

MCS2000-PSDRVH

Single package module consisting of a 24VDC power supply and dual channel 48VDC driver. This module can be used to power the MCS2000-ECA and requires a separate 48VDC power supply to operate two electro-mechanical brakes up to 3.0 amps/channel for closed-loop operation. For open-loop operation the module can be operated as a stand alone power supply/driver with a separate 48VDC power supply.

Specifications

Input Power/Output Power

Input supply	
DRV	+24VDC, ±10%, 1.4 Amps per channel
DRVH	+48VDC, ±10%, 3 Amps per channel
Ref. output	10 VDC, 10mA max.
Analog Inputs	
DRV, DRVH	Two 0–10 VDC inputs Two scalable inputs
DRVH	Additional two 0–20mA inputs
Analog Outputs	
DRV	Two 0–24 VDC 1.4A cont. 3A peak/ channel
DRVH	Two 0–48 VDC, 3A cont., 6A peak/channel w/o scaled outputs, 0–10DC, 10mA max.
Indicators	Two LED output indicators for channels A and B.
Adjustments	Anti-residual adjustment for each channel Offset adjustment for scalable input for each channel Gain adjustment for scalable input
Common Features	Short circuit and overload protection Quick disconnect terminals

MCS2000-DP
(P/N 6910-101-093)

Panel Mounted Programmer

A panel-mounted programming unit for the MCS2000-ECA Programmable Controller. A 6-foot shielded cable (provided with the unit) plugs into the 9-pin connector on top of the MCS2000-ECA.

Features

- 2 x 16 character backlit LCD display
- Powered by MCS2000-ECA Programmable Controller
- Easy-to-use menu-driven programming
- Requires only four push buttons for operation
- Can be used to display two different operating parameters while the system is running.

MCS2000-PRG
(P/N 6910-101-090)

Handheld Programmer

A handheld programming unit for use with the MCS2000-ECA Programmable Controller. A quick-disconnect cable (provided with the unit) plugs into a 4-position jack on the ECA.

Features

- 2 x 16 character backlit display
- Powered by MCS2000-ECA Programmable Controller
- Easy-to-use menu-driven programming
- Requires only four push buttons for operation
- Can be used to display two different operating parameters while the system is running.

MCS2000-CRD
(P/N 6910-101-091)

Memory Card

1 9/16" x 9/16" memory card for storing up to two full programs (port A or port B). Plugs into a slot in the MCS2000-ECA Programmable Controller.

Features

- Program memory (port A) can be downloaded off the card simply by cycling power to the MCS2000-ECA Programmable Controller.
- Card memory is protected against inadvertent erasures by a stray magnetic field.

MCS2000-IS

(P/N 6910-101-092)

Load Cell Interface

The interface sensor will sum and amplify the input signals from two load cells, and can be used with a number of different load cells. The interface should be positioned close to the load cells to ensure that no noise is injected into the low voltage signal before it is amplified.

Specifications

Input Power/Output Power	
Input supply	+24 VDC, ±10%, 300mA
Load cell supply	±15 VDC or ±5 VDC, 100mA max.
Analog Inputs	
2 load cell inputs	Range: Any voltage between 20 mV and 10 VDC, 5KΩ input impedance
Ultrasonic input	Range: 0–10 VDC, delta min. of 1 V, 10KΩ input impedance, Maximum gain: 1000
3 inputs for line speed	Range: 0–10 VDC, 10KΩ impedance
Analog Outputs (Short circuit protected)	
Calibrated load cell/ ultrasonic-sensor output	0–10 VDC, 10mA max.
Power for ultrasonic sensor	+24 VDC
Voltage reference	10 VDC, 10mA
Adjustments	Select polarity of ultrasonic sensor output, SW1 Select polarity of voltage reference, SW2 Setup min. & max. values for the load cell or ultrasonic input, SW3 Adjust gain of load cell inputs (p1, p2), 450 min., 1000 max. Adjust load cell offset (p3, p4), ±5 V Adjust gain of summed load cell (p5), 1 min., 2 max. Adjust gain on line speed (p6), 0–10 V Adjust offset for ultrasonic input (p7), 2.5 V max. Adjust gain for ultrasonic input (p8), 1 min., 5 max. Adjust gain for selected output (p9), 0.2 min., 1.1 max.
Indicators	Green power indicator Red 10-digit display indicates W3 setting

Electro-Pneumatic Transducer

(P/N 6910-101-066)

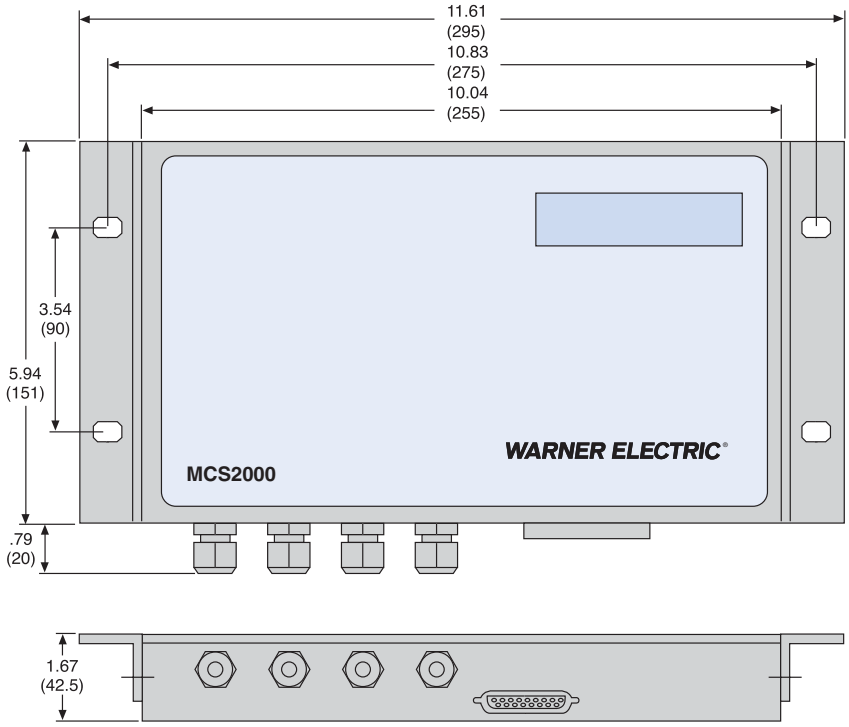
Used for interfacing with pneumatic brakes. Warner Electric offers a convenient package that consists of an air filter with automatic moisture drain, together with one I/P (current-pressure) transducer.

Specifications

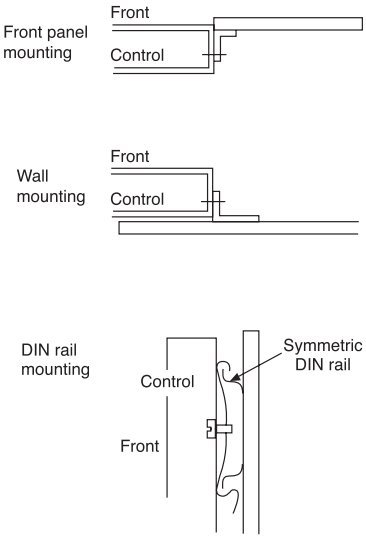
Input signal	4–20mA
Output range	0–120 Psig.
Supply pressure	20–150 Psig. **Note:** Supply pressure to the transducer must always be at least 5 Psig. above the maximum output pressure required for the brake.
Temperature range	-20˚F to 150˚F
Minimum air consumption	6.0 (SCFH) at 15 Psig.
Supply pressure effect	1.5 Psig. for 25 Psig. supply change
Pipe size	1/4" NPT (transducer and filter)

Dimensions

Closed Loop Controls

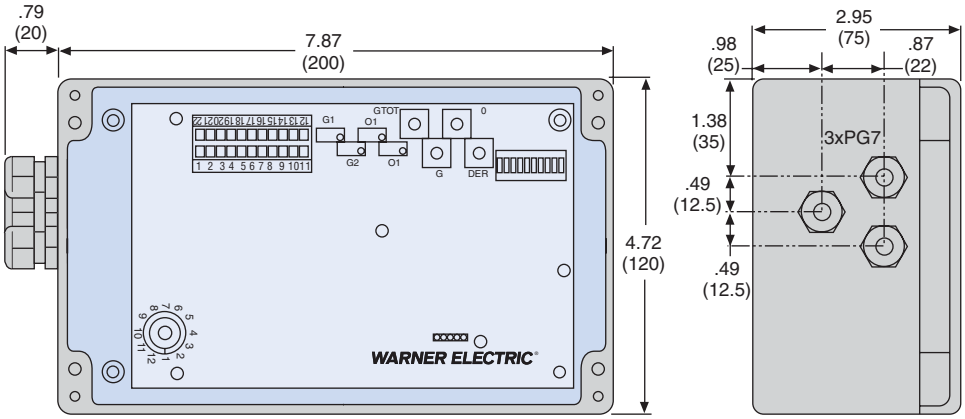


-CTDA, -CTLC

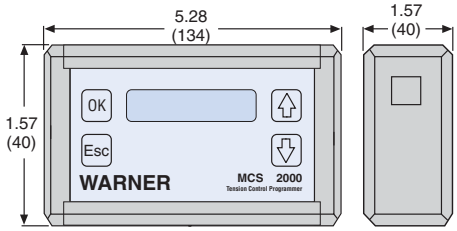


Mounting

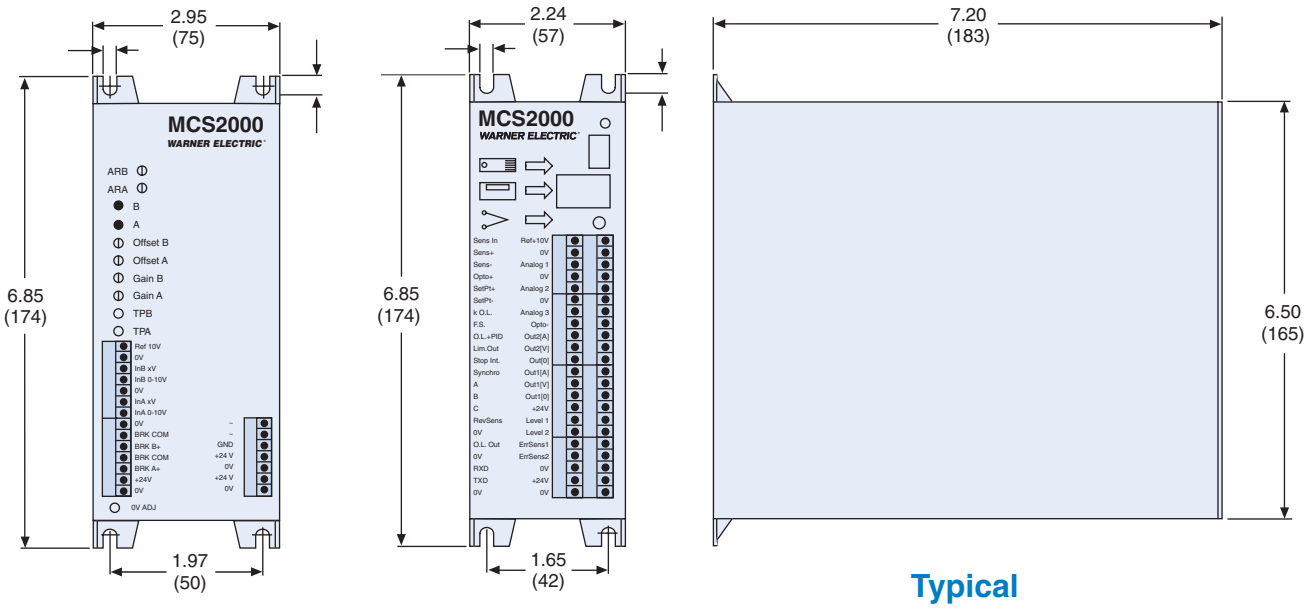
Load Cell Interface



-IS



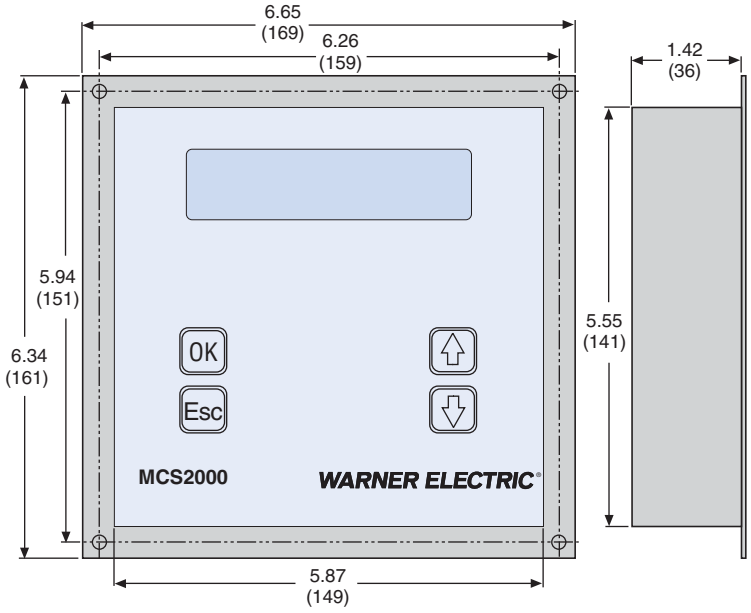
-PRG



-PS
-DRV/DRVH
-PSDRV/PS DRVH

-ECA

Typical



-DP

Weight

MCS2000	Lbs.
-ECA	2.00
-PS	2.00
-DRV	2.00
-DRV8	2.00
-DRVH	2.00
-PSDRV	2.00
-PSDRV8	2.00
-PRG	0.50
-DP	1.50
-IS	1.50
-CTDA	4.50
-CTLC	4.50