

OMNILINK II

Press Automation Control



The most advanced modular press automation system available with control, sequencing, monitoring, job storage, diagnostic and communication functions to increase productivity and quality in press production processes to new levels for global competitiveness.

The OmniLink II Automation Control:

- Integrates press, feed, and auxiliary systems functions
- Increases ease of operation for complex press production systems
- Increases productivity and reduces downtime
- Enhances quality control
- Reduces scrap parts
- Protects presses and dies
- Records and reports production information
- Provides job and PM scheduling
- Provides paperless recordkeeping



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Press Automation Control

Resolver based crankshaft speed and position with graphic and numeric display

Time-based dual limit Brake Monitor and Motion Detector

Multiple production counters

Speed advanced top stop for stops initiated by the OmniLink II system

Setting and display of stroking speed for variable speed presses

Storage and recall of all parameters for up to 500 jobs

Display in English or Spanish with one touch.

Help notes for setting parameters

Intelligent diagnostics

Date and time clock

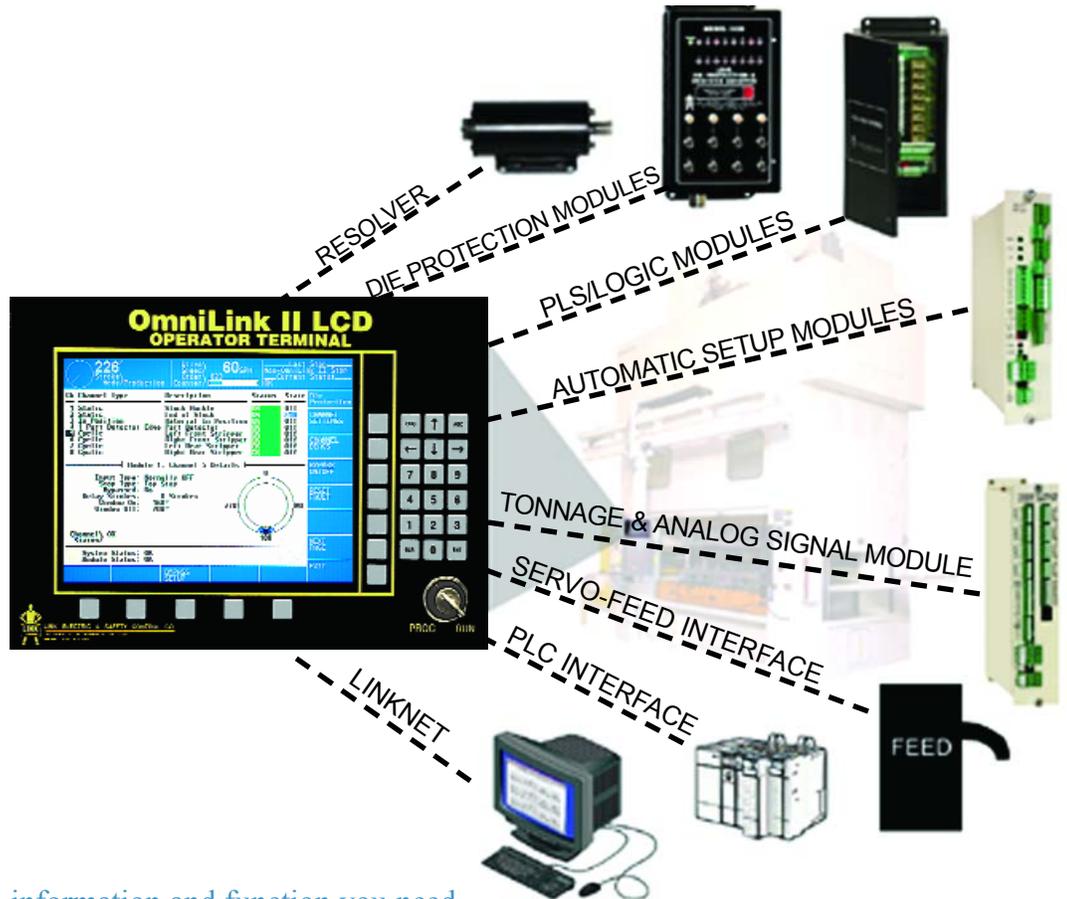
Running history of press stops initiated by OmniLink II System

User can store notes for press, job, and tools to display on Operator Terminal

Optional Servo Feed Interface

Optional PLC Interface

Optional LinkNet Shopfloor Information Network



All the information and function you need

The OmniLink II Press Automation Control works with your current press control to provide sequencing, control, monitoring, communication, and diagnostic functions to increase productivity and quality in your stamping processes. The Operator Terminal is the cornerstone of this automation control; integrating display, programming, and job storage for all options - **servo feed and PLC interfaces, LinkNet shopfloor reporting, programmable limit switches, digital and analog die protection and process monitoring, tonnage and signature monitoring, automatic adjustment of shut height and pressures** - into one coherent system.

Quick easy and secure setup

The system is set up to store settings for 500 jobs. ALL parameters associated with the options provided can initially be set manually and stored for a job. They are then available for recall and automatic setup for successive runs of the job. This reduces setup time, helps ensure consistent setups, and provides a paperless record of job setups. A highly configurable Access Control System lets the employer designate persons who can change settings, reset faults, and designate the actions each individual is allowed to perform. This helps prevent changes to settings by unauthorized personnel.

Intelligent diagnostics

The Operator Terminal displays the reason for any stop initiated by the automation control as well as any fault or condition seen by the system that prevents initiation of stroking, giving you precise information in English or Spanish so that you can take immediate corrective action.

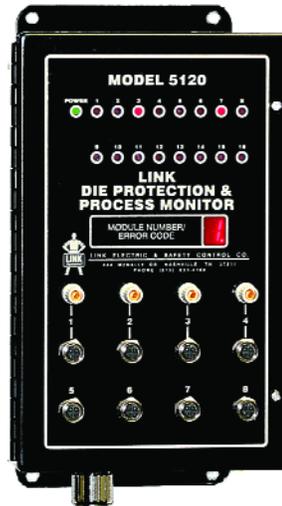
A system that grows with you

Because of the modular design of the system using distributed processing, additional modules are easily added to the system as needed. Simply mount the module, connect it to power and the system high speed serial bus, and configure the operator terminal to recognize the module.

Digital Die Protection and Process Monitor Modules

Never before has it been so easy to monitor your production process to protect dies and detect process faults affecting quality.

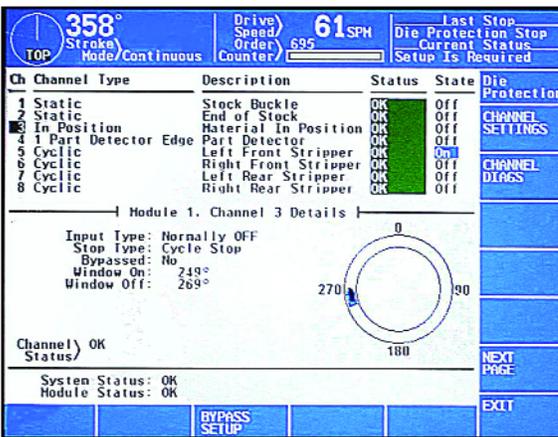
Digital Die Protection and Process Monitor modules provide interface for 8 or 16 digital sensor inputs each and provide power for sensors and various programmable logic modes for each channel to monitor stripper plates, parts ejection, short and long feed, transfer, end of stock, part in position, and other die and process items. For applications that require more than 16 inputs, additional modules (up to a total of 5) can be added, providing up to 80 inputs. Sensors can be wired individually to the module through cordsets or collectively through a multi-conductor cable from a junction box on the die to a quick connect receptacle on the module. When a fault is sensed, press stroking is stopped to protect press and dies.



- Monitor up to 80 sensor inputs
- Sensors may have npn, pnp, or contact outputs
- Programmable debounce of sensor inputs
- Real time capture of sensor transitions

Observe timing windows and sensor transitions on a circular crankshaft position graph as the press strokes and adjust on the fly

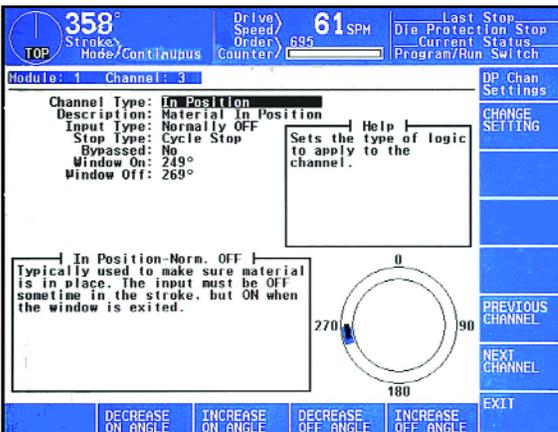
Choose Cycle Stop, Top Stop, or speed advanced Intelli-Stop, which decides on Top Stop or Cycle Stop



The main Die Protection screen shows the status of 8 channels at a time. Next page and previous page softkeys are used to view multiple groups of 8 channels. One of the unique features on this screen that permits instant identification of timing problems is a circular display that shows the angular timing window for cyclic events in blue and the real-time capture of the sensor signal for the highlighted channel in black.

Signal capture from multiple strokes can be overlaid on timing widow graph

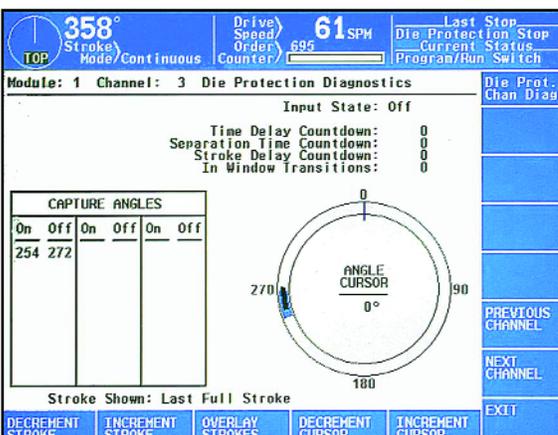
Multiple monitoring modes, including a programmable custom mode, increases versatility



Program all settings for a die protection channel on one screen. The Die Protection Channel Settings screen uses help and explanation notes that appear as a setting is selected to help walk you through the setup and make channel configuration easy. A broad selection of channel logic types, including a custom type that can be specified by the user allows versatile monitoring of the production process

Description of items monitored by each channel can be entered by the user for ease of troubleshooting

Help notes aid in setting up channels to perform desired monitoring



The Die Protection Diagnostic Screen uses a graphic and a tabular display to show the last 64 sensor transitions. This helps you quickly see where your sensor is turning off and on relative to crankshaft position and allows timing windows to be adjusted, even during press stroking.

Provides graphic and tabular history of last 64 sensor transitions



OMNILINK II

PLS/Logic Module

Either 8 or 16 outputs per module for Programmable Limit Switch and other control functions

Available with either electro-mechanical or solid state (ac or dc) output relays

16 inputs per module allow PLS sequencing by event and verifying action of automation sequenced by PLS

PLS may be configured to provide automatic top stop compensation for variable speed presses

Provides Speed Advanced, Timed, and Counted, and Toggle outputs

Channels can be user programmed with a twenty character alpha-numeric description

PLS outputs can be viewed on a circular graph and incrementally adjusted as the press strokes

Status and diagnostic information is displayed for individual channels, the particular module, and the total system

The most flexible automation sequencing available with outputs that can be programmed to turn on and off by crankshaft angle, time, or associated input channels.



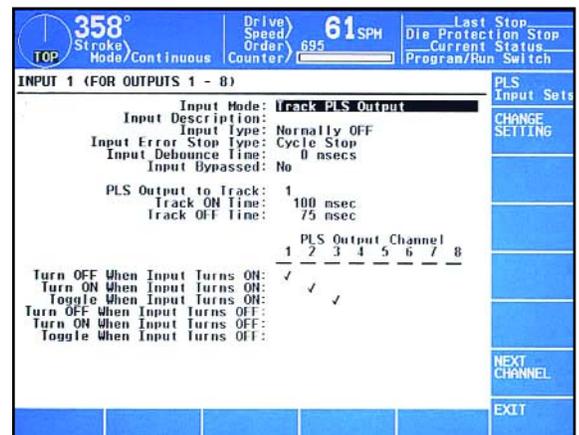
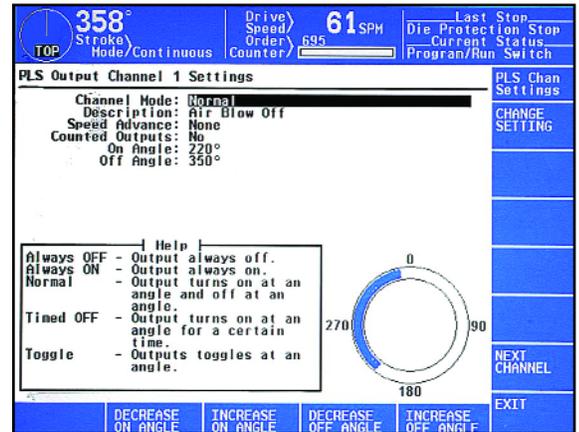
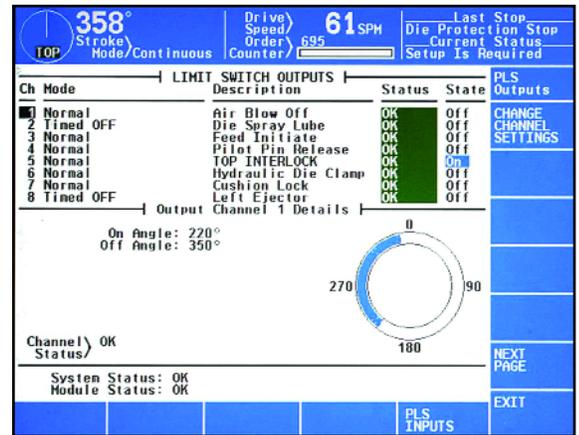
Each OmniLink II 5100 series Programmable Limit Switch/Logic module provides up to 16 output relays and has the unique feature of 16 associated inputs. These inputs provide unparalleled flexibility for the control, sequencing, and monitoring of feed line, transfer, ejection, and other auxiliary automation on your press. This module not only provides traditional PLS functions, but can use sensors tied to its inputs to verify that the automation action commanded by outputs is performed. These inputs also allow sequential turn on or turn off of outputs by sensors. Up to 6

PLS/Logic modules may be used with the OmniLink II automation control for a maximum of 96 output and input channels.

The PLS Outputs screen shows the status of 8 channels at a time. Next page and previous page softkeys are used to view multiple groups of 8 channels. A circular display shows the angular timing window for cyclic events in blue. Module status and system status are also shown on the PLS Outputs screen.

The Channel Settings screen allows each PLS channel to be programmed for Always On, Always Off, Angle On - Angle Off, Angle On - Timed Off, Toggle, or Input Driven Only mode. All modes are available for all channels. Certain modes have special actions available. These actions include counted outputs, speed advanced outputs, and On and Off at events detected by sensors connected to the module inputs. On and Off angles can be incremented as the press strokes on this screen.

The Input Sets screen provides the setup for Track Mode, where sensors tied to the inputs verify that actions commanded by PLS outputs occur within a response time set by the user. It also provides setup for PLS outputs to be turned on or off as the inputs sense that events occur.



Auto Setup Module

Fast and consistent set-up when changing from job to job means more uptime, increased productivity, and more consistent parts quality.

The OmniLink II Auto Setup Module provides recall and automatic adjustment of slide shut height and air pressures of such auxiliary press systems as counterbalances, cushions, and hydraulic overloads for the jobs run in the press. This provides a paperless record of job settings, greatly reduces changeover time between jobs, and provides more consistent setups. Each Auto Setup Module can provide the shut height adjustment for one slide and control two air systems or can control four air systems if no slide adjust option is provided. Up to four Auto Setup Modules can be used with the OmniLink II automation control, providing for numerous slides and air systems.



Provides fast, consistent changeover between jobs

Final slide adjustment is always made from one direction to prevent inaccuracies due to clearance in adjusting screw threads

Repeatability of less than .001 inches in slide adjustment setups

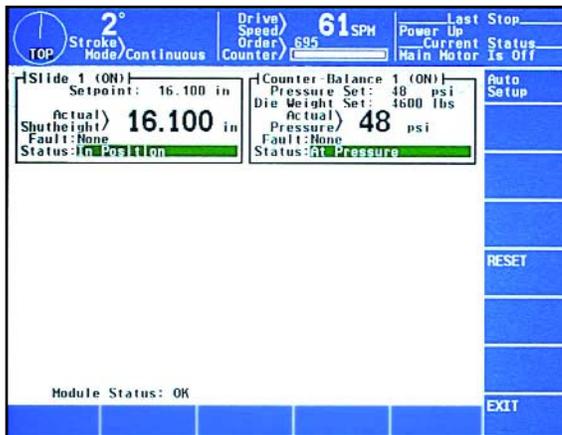
Can be configured for English or Metric Units of measurement

Enter either pressure or die weight when initially storing the settings for counterbalance pressure

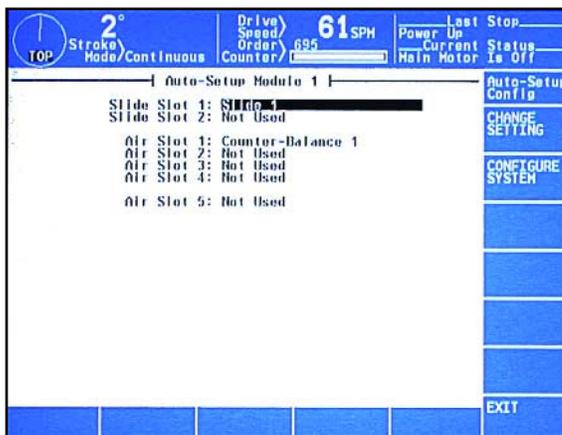
Automatically adjusts to maintain correct pressures as temperature and other factors that affect pressure change

Adjusts counterbalance pressure for exact die weight, rather than die weight within a range

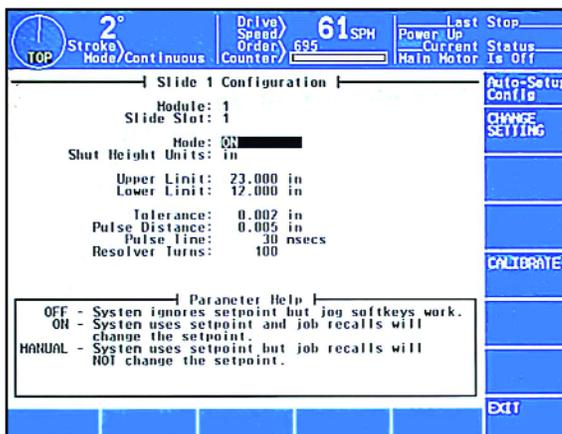
Set individual tolerances on slide shut height and pressure adjust channels



Present setpoints and actual measured values are displayed simultaneously, along with any fault conditions and the status of the module. Diagnostics help keep any required troubleshooting time to a minimum.



When the module is configured for slide shut height control, OmniLink II can automatically provide accurate, repeatable shut height adjustment for each job recalled from memory. A rotary shut height transducer supplied by Link is used to provide slide position information to the control.



By automatically setting the counterbalance and cushion air pressures as a job is recalled, the OmniLink II assures that the pressure is correct for the tooling used. The Auto Setup Module sets the correct pressure for each die, rather than an approximate pressure for a range of die weights.



Four strain link connections standard. Use in either two or four channel tonnage monitor applications

OmniLink II provides high resolution crankshaft angle information to the module for 0.1 degree display of tonnage or analog sensors for signature graphs

Up to four data windows can be set for each job

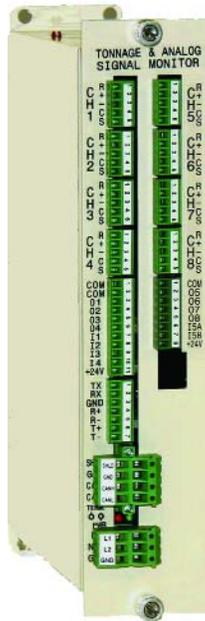
High limit, low limit, and reverse limit can be set for peak tonnages. High and low limits can be set for each data window

Tonnage limits can be set manually, automatically set after sampling several strokes, or recalled from job storage memory

Graphs of tonnage vs. crankshaft angle for total tonnage and for each channel are updated as the press strokes

Reference graphs can be stored for each job

Optional digital die protection and PLS channels are shown and programmed seamlessly on the OmniLink II Operator Terminal with other such channels provided by other modules



OMNILINK II

Tonnage and Analog Signal Monitor Module

A versatile module that provides a new standard for signature tonnage monitoring and a variety of optional limited automation sequencing and monitoring functions

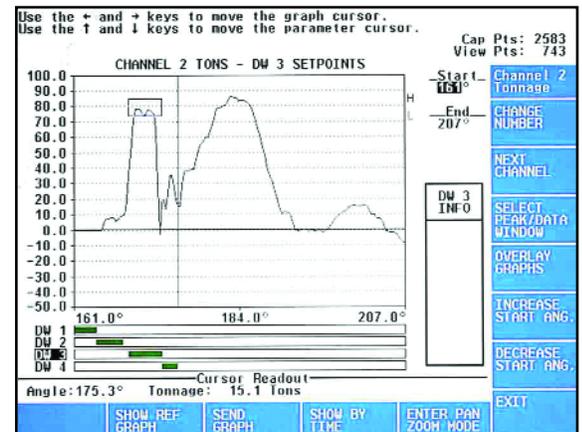
The Tonnage and Analog Signal Module provides up to a 4 channel signature tonnage monitor and a power supply capable of powering sensors for options that can be added. One optional circuit board for the module provides 4 digital die protection inputs and drive signals for 4 programmable limit switch

outputs (external relays must be added for PLS outputs). A second optional circuit board provides 4 analog sensor inputs, 4 output drive signals and one isolated digital input. Options also include serial ports for future use and a True Part Count function using sensors to count parts as they go into bins, Parts can be diverted to another bin at count complete.

The Tonnage screen provides detailed at-a-glance status for each channel. Present tonnage, alarm status, and high and low limits are shown graphically and numerically. Limits are applied to peak tonnage for each channel and 4 data windows allow limits to be set for tonnages in up to four different crankshaft regions to monitor different die features. These Data windows allow better detection of wear of different punches in the die and out of limit hits that can affect part quality and damage dies.

The Tonnage Graph screen shows the actual signatures of the die, i.e., tonnages created by the die vs. crankshaft angle. The graphs update as the press strokes or, if desired, can be overlaid for multiple strokes. Graphs include total tonnage or tonnage of each channel. The setting of data windows and their limits is easily done on the the channel graph screens as the tonnage created by different die features is clearly shown

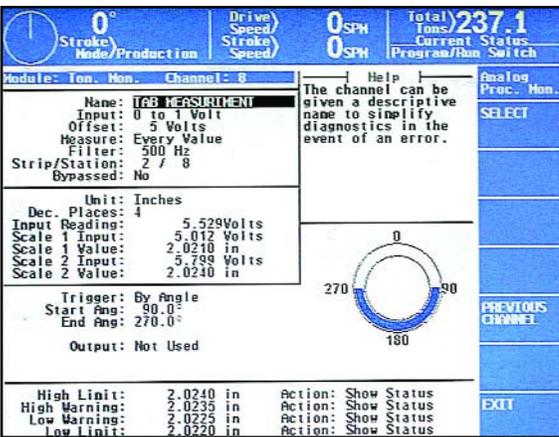
An optional four digital die protection inputs and four PLS outputs make the Tonnage and Analog Signal Monitor Module a great value for presses that need a limited number of die protection and PLS channels. If more die protection and PLS channels are needed at a later time, add Die Protection and Process Monitor and PLS/Logic modules to provide additional channels.



Analog Signal Monitor Option

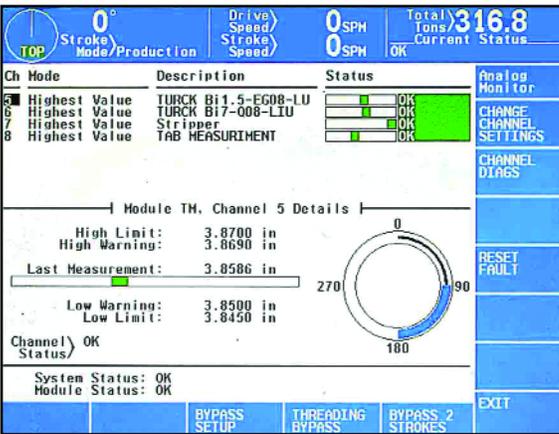
Monitor part features with in-die sensors for in-process quality verification. Monitor individual forces on punches in die to detect critical die damage that leads to bad parts.

Adding the optional analog signal monitor board to the Tonnage and Analog Signal Module provides 4 **analog sensor inputs** for in-die part measurement and other analog process monitoring. Sensors can be strain gages, analog proximity sensors, analog optic sensors, LVDT sensors, pressure sensors, thermal sensors, etc. The inputs can be configured for sensors with strain gage, 4-20ma and various voltage span outputs. When only two channels of the tonnage monitor are used, the remaining two channels will appear on the analog monitor screen for use as strain gage only inputs, giving a total of 6 analog channels.

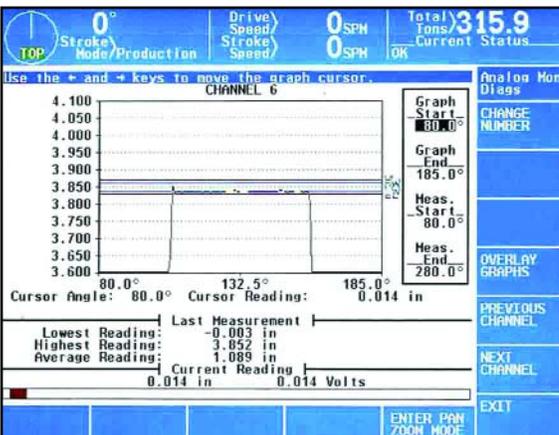


This option also provides four output drive signals to actuate measurement fixtures or devices at the user selected position in the press stroke. An isolated input is also provided so that an external signal can specify when a measurement is to be taken.

Easy setup for analog monitoring channels is done on a single screen, with help notes that appear as each item is selected. Describing the measurement, configuring the channel for type of sensor, calibrating the measured quantity, and defining the angular window where the measurement is taken is done in this screen. This screen also is used to program high and low limit setpoints and high and low warning setpoints, and the actions to be taken when a limit is violated.



The analog signal monitor main screen shows the measurements made vs. limits on color coded bar graphs for each channel. Force, pressure, distance, temperature, and other quantities may be monitored based on sensor type and application. Some applications allow distance measurements within a ten-thousandth of an inch resolution.



The analog signal monitor diagnostic screen shows the graph (signature) of the measured quantity vs. crankshaft angle. This graph can be used to analyze conditions that affect the measurement. To obtain the best measurement consistency, the user may choose to apply the limits to the highest, lowest, average, or every value of the measured quantity within the measurement window.

Provides user programmable 20 Character descriptions for digital die protection, PLS, and analog signal channels

User programmable analog monitor window sets crankshaft region where each channel measures and compares measurements with limits. Alternatively, an input is available for external measurement trigger

High and low limits, and high and low warning set-points for the analog monitor can be set manually or stored and recalled from job memory

Limits can be set to apply to highest, lowest, average, or every value measured in the measurement window. Individually set the action taken when each limit is exceeded. Choices include None, Top Stop, Cycle Stop, Intelli-Stop, Show Status and Mark Bad

Measure part features to ten thousandths of an inch with proper choice of sensor and application

The analog monitor provides for English, Metric, or dimensionless units of measurement



Link Systems designs, develops, and manufactures electronic controls, monitors, and safety devices for the metal stamping and fabrication industry. We are an engineering company committed to providing practical solutions to our customer's needs for automation, productivity, quality, safety, and shop floor information storage and retrieval.

Our product line is flexible enough to provide a specific control or monitoring function or to provide integrated systems for your presses. Link supplies products and systems to both the retrofit and OEM markets. We also provide engineering consultation, installation, and repair services for our systems.

Our control products provide the latest reliable technology to increase safety and productivity and reduce setup time.

Our light curtain safety devices protect against hazards while allowing accessibility and visibility for the operator.

Our monitoring systems can help prevent machine and tooling damage and reduce production of scrap parts.

Let **Link Systems** help your company achieve your goals.



LINK ELECTRIC & SAFETY CONTROL CO.

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