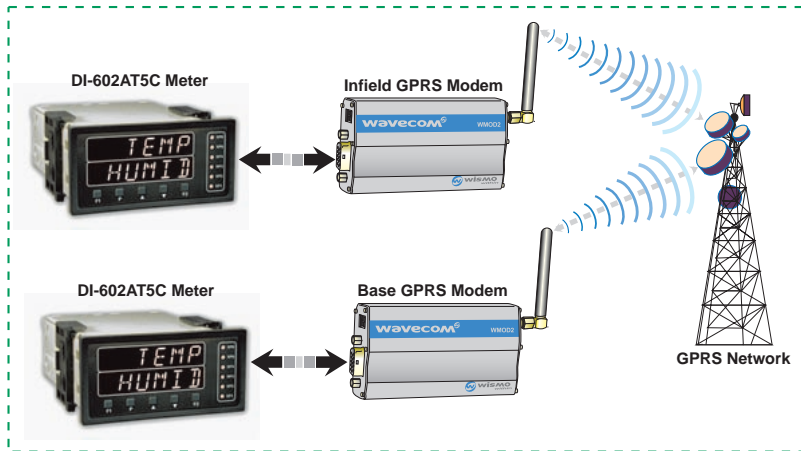
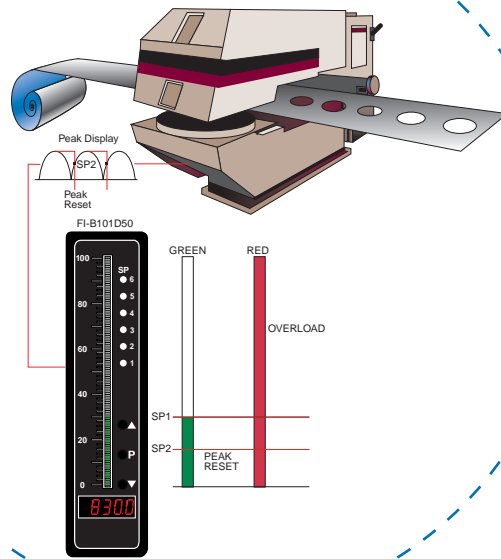


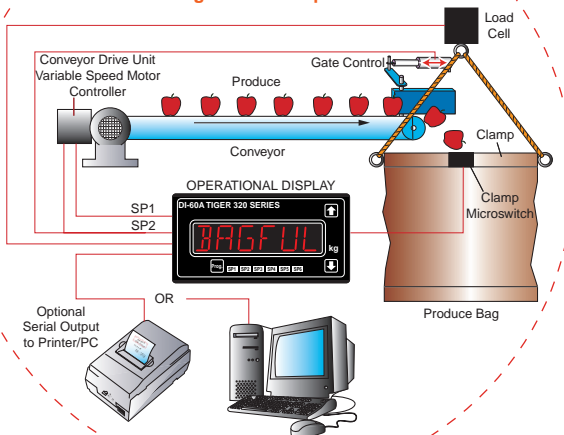
APPLICATION NOTES



Press Control Peak Overload Application



Bag Filling Machine Using Load Cell Input



www.texmate.com

www.panelmeter.com

www.bargraphs.com



1976 to 2003

27 years of experience

Texmate was founded as a California corporation in 1976 with the goal of designing and producing the world's best digital panel meters. Texmate has grown to become a leading international private label manufacturer, and we are proud of the fact that some of the world's most prestigious and quality conscious companies have their brand names placed on our products. Texmate now manufactures the world largest and most comprehensive range of electronic panel meters, bargraphs and controllers.



Texmate's meters are designed and built to the latest American, European and Japanese standards, in more than 20 different case sizes and styles. They accept hundreds of different input signals, and their modular design enables thousands of different configurations to be produced at cost effective prices.

Call Today and Have Us build a Meter to satisfy Your special Requirements

Manufacturing

Texmate has become a multinational company with engineering, manufacturing and sales facilities in the USA, Germany, New Zealand, Japan, Taiwan and Thailand. However, 95% of all the meters we manufacture are currently assembled in our own Californian plant.



State-of-the-Art Manufacturing Facilities

Distribution

Texmate meters are available for immediate delivery from more than 80 authorized stocking distributor locations in the USA, Canada, and Mexico. International sales are handled regionally by Texmate subsidiaries in Asia and Europe, or by authorized representatives.

Call for the nearest location, or visit our website at www.texmate.com.

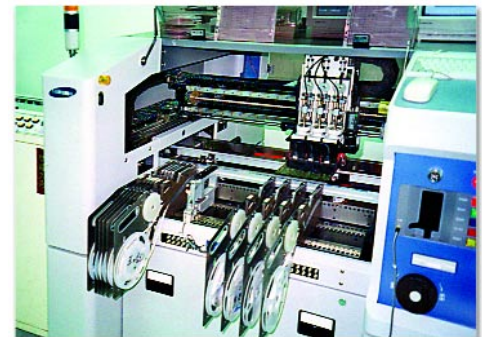
Free Technical and Applications Support

Phone: 1-760-598-9899 7am-6pm USA Pacific Time Mon. to Fri.
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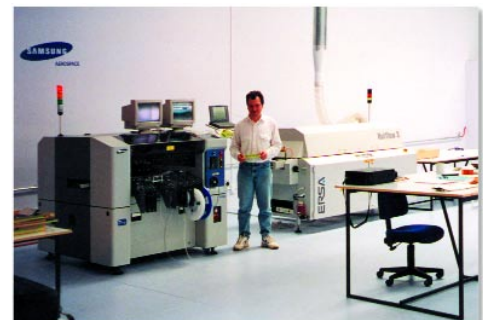
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or 1-760-598-9899 7am-6pm USA Pacific Time. Mon. to Fri.
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High Speed, High Precision SMD Assembly

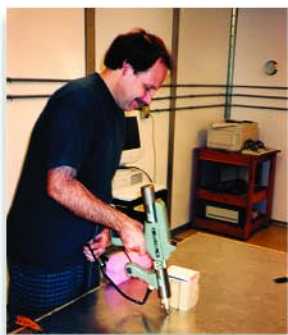


Texmate's Customer Service Team - Vista, California
We enjoy our work and we know you will too.



Designed to be the best, built to last the longest

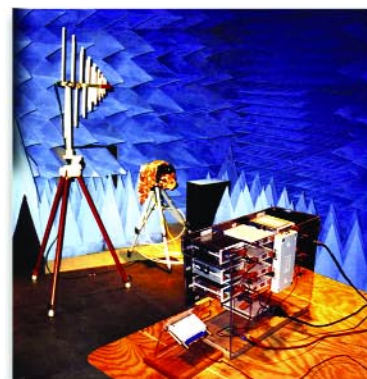
Quality by Design, Proven by Testing, Testing and Even More Testing



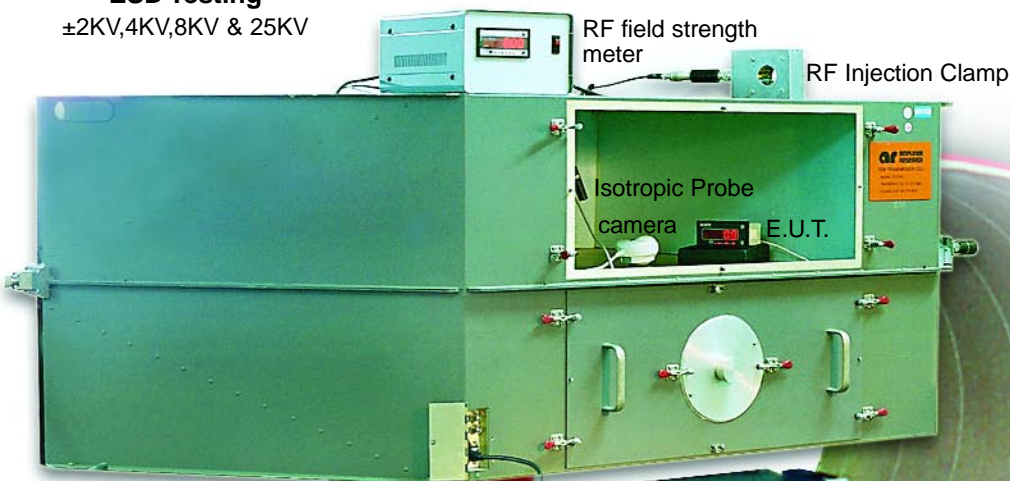
ESD Testing
±2KV,4KV,8KV & 25KV



NOISEKEN Burst Testing, Direct and Coupled. Selectable pulse width from 50nS to 1.2µS at 0 to 100Hz with sub nano sec rise time.



Anechoic Chamber Testing
RF Immunity from 80MHz to 1GHz at field strengths greater than 10V per meter



Laboratory TEM Cell for testing RF Immunity and Emissions

RF inputs from 50 to 500 MHz at field strengths up to 300V/m.

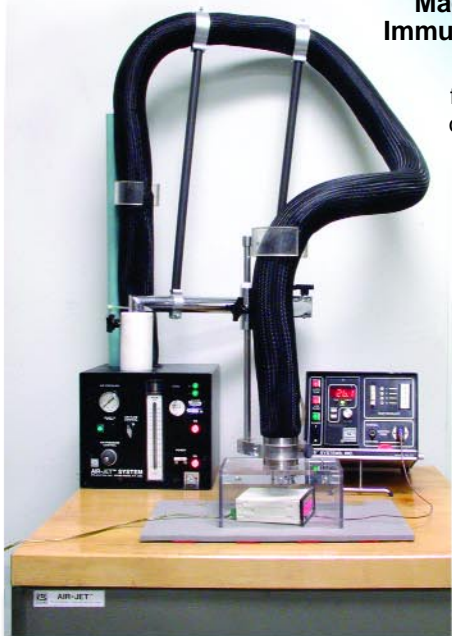
Completely shielded from external noise, precision RF emissions can be measured, from 30 MHz to 1 GHz at 10 to 500 dB-microvolts.



Open Air EMI Emission Testing
to CSFR 22

Magnetic Field Immunity Testing

All 3 axes at field strengths of 30 Amp/m .



Shake and Vibration Testing

Extreme Temperature Cycling
Temperature testing from -40°C to +70°C in 14 seconds



Life Testing
at elevated temperatures



Precision Case Tooling



Impact / Drop Testing



An Overview of the Awesome Power of the Tiger 320 Series

The Tiger 320 Series of 32-bit Programmable Meter Controllers incorporates, in one instrument, all the different functions required by today's automation and process control applications.

1 Tiger 320 32-Bit Operating System

A virtual toolbox of selectable and programmable application software functions are embedded in the Tiger 320 Operating System. They integrate seamlessly with a truly vast array of modular input and output hardware options.

Embedded Application Software Includes:

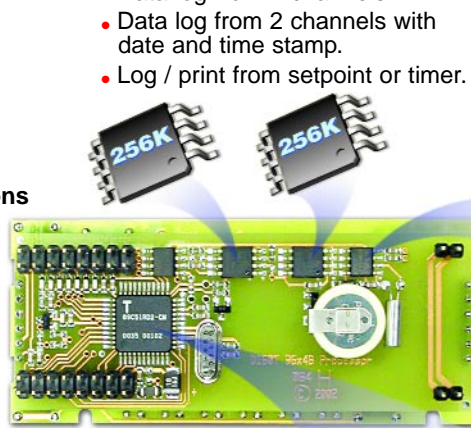
- Multi-channel Inputs In Many Combinations
- Full Floating-point Maths
- Cross Channel Math (A+B, A-B, AxB, A/B)
- Square Root, Inverse and Log of Input
- 4 x 32 Point Or 1 x 125 Point Linearization Table
- Smart Auto Zero with Programmable Capture Band, Rate of Change and Aperture Window for Weighing Applications
- Set Tare, Reset Tare for Batching
- Smart Quick Response Averaging
- Smart Timer and Time Integration Functions
- Time and Event-based Sequencing
- Polynomial Calculations
- Remote Reset of Any Function
- Dual Totalizers
- Dual PID

2 Data Logging and Memory Options

Up to 1MB of non-volatile on-board memory can be installed for (Black Box) endless loop recording. Up to 4000 data records can be continuously stored to provide before and after analysis of any process fault condition.

- Data log from 4 channels.
- Data log from 2 channels with date and time stamp.
- Log / print from setpoint or timer.

Plug-in memory modules can be provided for high-capacity or long-term data logging.



3 Real-time Clock



Optional Real-time clock with date and time stamp.

15 year lithium battery.

4 Powerful Custom Macro Programming Capability

Texmate's BASIC to Tiger 320 Macro-language Compiler can quickly Convert your special metering, control and automation ideas into reality.

This powerful easy to use development system enables programs to be written in BASIC utilizing any combination of the hundreds of functions and thousands of registers embedded in the Tiger 320 Operating System. When your BASIC program is compiled into the Tiger 320 Macro-language it is error checked and optimized. There are also numerous off-the-shelf application specific programs available. Many only need the blanks to be filled in to use them and this does not require any knowledge of BASIC.



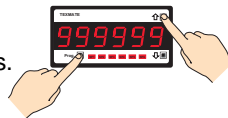
Scrolling annunciator messages can be programmed to appear with any setpoint activation, selected events or logic inputs.

5 Programmable Front Panel Controls

Programmable Front Panel Controls

The front panel buttons can be used to control or program any standard functions.

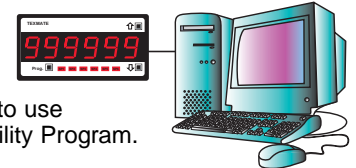
They can also be programmed to only access and display specifically designated functions, such as Tare, Auto-Cal or Print on Demand.



6 Configuration & Programming from a PC

PC Programming

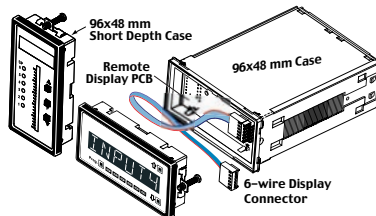
Program the meter from a PC with Texmate's easy to use Tiger 320 Configuration Utility Program.



7 A Wide Selection of Display Formats & 8 Case Sizes to Suit any Application

Single or multiple LED or LCD displays
Numeric, Alpha Numeric and Bargraph

144x72mm 9/32 DIN



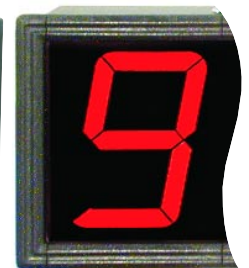
96x48mm 1/8 DIN



648x144mm 4" LED Remote Display
5 or 6 digit
Driven by RS485 from any Tiger 320

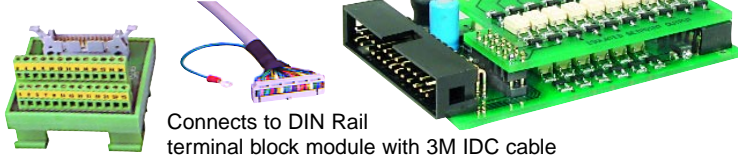
36x144mm 9/64 DIN

48x96mm 1/8 DIN

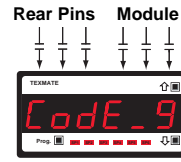


8 22 Opto-Isolated I/Os on Plug-in Module & 6 Onboard Programmable I/O Logic Ports

- 6 Inputs & 6 Outputs or 6 Inputs & 16 Outputs
- Fully Programmable

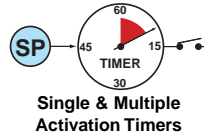
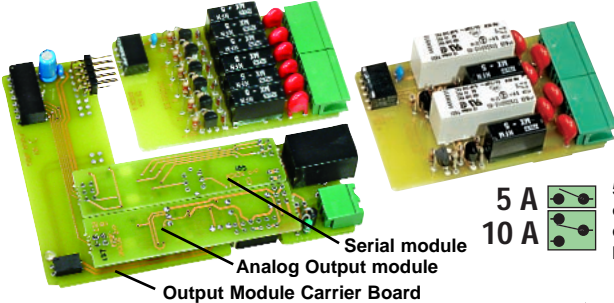


Connects to DIN Rail terminal block module with 3M IDC cable



Three logic level inputs are provided on the module input header and three rear input pins are provided that can be programmed to STOP/START/RESET almost any function including: set tare, reset tare, relays, totalizers, print output, data logging, peak, valley, or any register from an external contact closure.

9 6 Super Smart Setpoints - 8 Selectable Functions - 7 Programmable Timer Modes



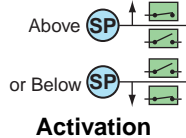
Single & Multiple Activation Timers



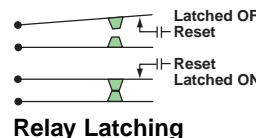
5 Amp and 10 Amp Relays or optional SSR Outputs can be energized above or below setpoints.

7 Multi Function Interval Timers on all 6 setpoints

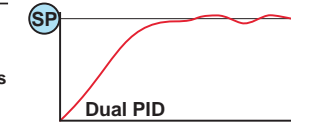
- NormalAdjustable Delay On Make / Adjustable Delay On Break
- 1-Shot ONAdjustable Delay On Make / Adjustable Min ON-Time
- 1-Shot OFFAdjustable Delay On Break / Adjustable Min OFF-Time
- Pulse ONAdjustable Delay On Make / Adjustable Max ON-Time
- Pulse OFFAdjustable Delay On Break / Adjustable Max OFF-Time
- Repeat ONAdjustable ON-Time / Adjustable OFF-Time
- Repeat OFFAdjustable OFF-Time / Adjustable ON-Time



Activation



Relay Latching



10 Scrolling Annunciator

Scrolling Annunciator up to 99 Characters long is available on all 6 setpoints for Alphanumeric Displays with Fill-in-the-blanks Macro.



12 16-bit Isolated Analog Outputs

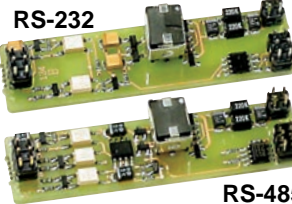
4-20mA

Single and Dual

Programmable 0/4 to 20 mA or 0 to 10 V for retransmission, 4-20 mA loops, drive valve actuators, remote controllers & displays, multi-loop feedback and PID output.

0-10V

11 Serial Communications and Printer Output



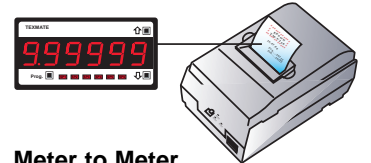
Selectable Communication Modes include:

- ASCII • Modbus
- Ethernet (TCP/IP)
- DeviceNet (provided on special DeviceNet output module carrier board)

Interface directly with PCs (using Window's terminal program), PLCs, or any Epson compatible serial printer.

Serial Printer Output

Smart printer driver makes simple serial printers look intelligent.



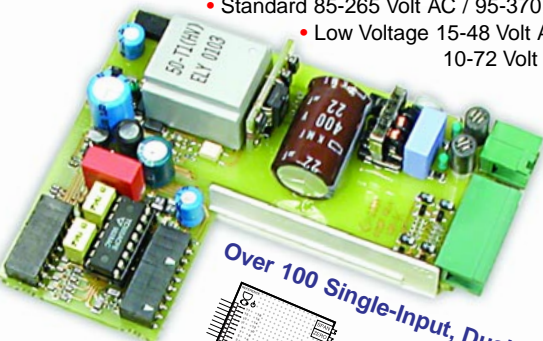
Meter to Meter Communication

Direct meter to meter communication enables two meters to share data and resources.



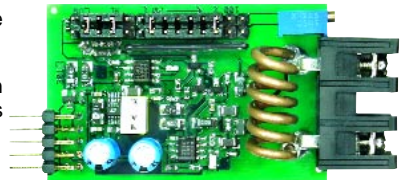
13 Auto-sensing AC/DC Power Supply

- High Efficiency CE tested Auto Sensing AC/DC power supplies
- Standard 85-265 Volt AC / 95-370 Volt DC
- Low Voltage 15-48 Volt AC / 10-72 Volt DC



14 Over 100 Different Input Signal Conditioning Modules

- Choose from over 100 different single, dual, triple and quad input signal conditioners.
- Mixed function and smart modules with their own A/D's, co-processors, SSR's and I²C Bus outputs are available to suit almost any application.



AC-Amps True RMS 0-5Amp AC

Over 100 Single-Input, Dual-Input, Triple Input and Quad-Input signal conditioners work with the Tiger 320 series

Harnessing the Power of the Tiger 320

A combination of modular hardware and software resources enable Tiger 320 Series Programmable Meter Controllers (PMCs) to be easily configured as a cost effective solution for the most simple or the most complex of applications.

A review of your Project's objectives, its physical layout, the proposed sensors and control outputs will enable you to select the optimum configuration of the Tiger 320 PMC's unique hardware and software capabilities.

Input Signals & Sensors

4-20 mA or Sensor Direct

Unless sensors are located at a far distance, the greatest accuracy and best performance is usually obtained by connecting sensors directly to the Tiger 320, which will then function as the primary measurement device.

There are more than 120 Tiger compatible input signal conditioning modules, with the appropriate excitation outputs, to suit almost any type of sensor or combinations of up to 4 sensors.

In most cases, sensors with a 4-20 mA output are more costly, and when a separate 4-20 mA transmitter is used, signal conversion, drift, and calibration inaccuracies are introduced.

Some Tiger input modules combine direct sensor inputs with 4-20 mA inputs, enabling both local and far distant sensor inputs to be combined.

Sensor Linearization or Compensation

The performance of many sensors can be greatly enhanced or expanded with linearization and/or compensation. Sensors may be compensated for temperature, frequency, altitude, humidity and mechanical position, to name just a few parameters.

Tiger PMCs with 32 kilobits or more of memory provide up to four 32-point user defined linearization tables or one combined 125-point table.

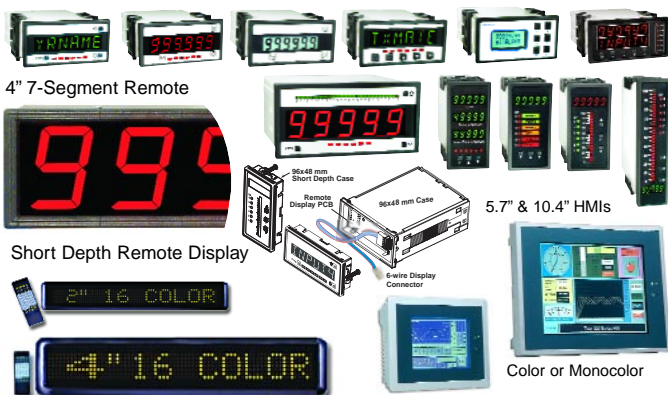
Many compensation methods can be implemented with the standard cross channel math capabilities of the Tiger's 32-bit operating system. Complex three-dimensional compensation can also be implemented using the powerful macro programming capability.

The serial number and calibration date of a sensor can be loaded into the meter. The serial number, linearization tables, and compensation factors of a newly calibrated sensor can then be saved for future reloading, either serially through a PC or directly through the web via an Ethernet port.

Although there are numerous input modules with combinations of various input signals, some inputs such as watts or pH are provided on input modules dedicated to a single function. Combining these inputs with each other signals two or more Tiger meters can serially communicate, and be configured to share their data and processing resources.

Display Options

Tiger PMCs have a large range of display options, including digital and alphanumeric LCDs, LEDs and Touch Panel HMIs.



LED or LCD Displays

LED displays are a lower cost and popular display option. They operate over the largest temperature range, have better viewing angles and viewing distances, and have the longest operational life. However, red LEDs are difficult to read in direct sunlight without a shade hood and consume more power. Green LEDs and backlit LCD displays can be more easily read in direct sunlight.

The Tiger range can be ordered with red or green LEDs. LCD displays are also available, with or without back-lighting.

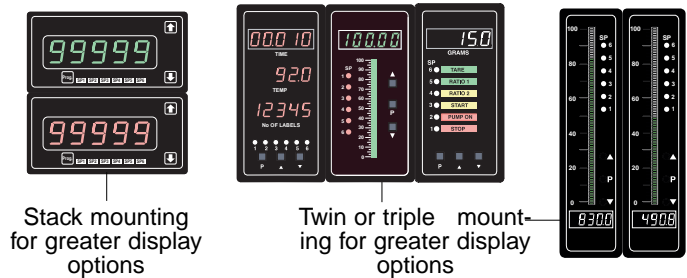
Numeric or Alphanumeric Displays

Generally, numeric displays are a lower cost option than alphanumeric displays. The Tiger range supports a full 7-segment numeric and 14-segment alphanumeric alphabet of English letters and Arabic numerals. Where complex text messaging or alarm annunciation is required, we recommend using the 14-segment alphanumeric option.

Single or Multiple Display

The Tiger meter has four input channels and can be configured to display many different inputs or results. These can be viewed constantly on the operational display, or on demand in one of the view modes by pressing a button. Some applications require multiple values to be displayed simultaneously. With single, dual, or triple displays, and single displays with 51 or 101-segment bargraph combinations, we have a large range of display options to choose from.

Tiger meters can communicate with each other to share their data and processing resources and be stack or twin mounted to provide a wider range of display options.



Push Button or Membrane Touch Pads

Tiger PMCs are shipped as standard with high usage hard plastic push buttons. An optional clear lens cover that opens on a cam hinge with a key lock can provide full NEMA 4 or IP65 dust and water proofing. Alternatively, an optional membrane touch pad faceplate can be ordered.



Control Outputs & I/O Logic

Electromechanical Relays or Solid State Control Outputs

Tiger PMCs have a wide selection of control outputs to choose from. The decision on which control output to choose depends on the current and the switching frequency.


Electromechanical relays are a popular choice for most control outputs. Tiger output modules are available with combinations of two 10 amp form C and two to six 5 amp form A relays that can be used to directly drive fractional HP motors or actuators.

The limitation of electromechanical relays is switching speed. If a relay needs to operate in less than 30 mS, or be cycled faster than .5 cpm, it is advisable to select an output module with solid state relays (SSR) or open collector outputs (OC), that can drive external high current SSRs.

Harnessing the Power of the Tiger 320


PID or On/Off Control

Depending on the process to be controlled, either PID or on/off control should be selected. If the process variables are reasonably consistent, then the on/off control is generally more than adequate and easier to implement. Super smart setpoint control software supports many selectable functions, such as Hi or Lo activation, Latching, Hysteresis, Tracking, Register Resetting and 7 Multi-function internal Timers on all setpoints.

 Control systems with large lag and lead times are not suitable for on/off control and tend to overshoot and undershoot. PID is needed to stabilize and control these systems. One of the many powerful setpoint functions provided by the Tiger 320 Operating System is single or dual PID.


Retransmission 0-10V or 4-20mA

Tiger PMCs can have an optional single (0-10 V or 0/4-20 mA) or dual (0-10 V) analog output module installed. The isolated 16-bit output is fully scalable and highly accurate. With a compliance of up to 500Ω at 20mA, the 4-20 mA output can be used over very long distances and still drive more than one output device, such as a PID controlled valve positioner.

 The analog outputs can be reversed to output 20mA to 4/0 or 10 to 0VDC. They can be scaled across any portion of the digital range, up to full scale. The output can be programmed to swing 0 to 20mA or 0 to 10V in one digital count to drive external logic or SSRs as additional setpoints. Under Macro Program Control, the analog outputs can be programmed to produce pulses or even sinewaves.

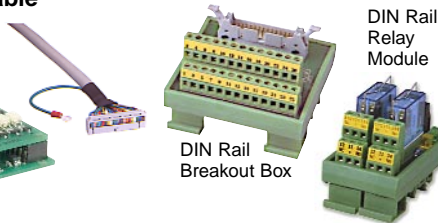
I/O Logic, Rear Panel or Breakout Box

The Tiger Operating System has many built-in logic functions that can be used to develop sophisticated control systems. The Tiger PMC has three logic inputs/outputs available via the LOCK, HOLD, and CAPTURE pins, and three logic I/Os are available for input module use via pins D1, D2 and D3.

 More complex I/O intensive applications require an opto-isolated I/O intensive applications require an opto-isolated I/O plug-in module, which supports six inputs and up to 16 outputs. This module can connect to an external Breakout Box that is DIN Rail mountable with screw terminal blocks. There are also compatible DIN Rail mounting electromechanical relays and SSR modules.

- 6 Inputs & 16 Outputs or 6 Inputs & 6 Outputs
- Fully Programmable

Connects to DIN Rail terminal block module with 3M IDC cable



DIN Rail Breakout Box

DIN Rail Relay Module


Serial Communication

The easiest way to configure or program a Tiger PMC is with the free user-friendly Configuration or Macro Development Software. Serial I/O is provided via an optional Plug-in output carrier board, which supports RS-232 or RS-485 output modules. If serial I/O is not required by the application, the serial carrier board can be removed for reuse. The Tiger 320 Operating System supports several serial protocols, including ASCII, Modbus RTU and Print Mode (which includes a printer driver and support for direct meter to meter communications). Also supported is DeviceNet, which requires a special dedicated carrier board, and Ethernet (TCP/IP), which requires an external converter box.

RS-232 or RS-485

Except for DeviceNet, all serial communication modes supported by the Tiger can function with either RS-232 or RS-485. The limitations of RS-232 are that only one meter at a time can be connected to the serial port of a computer, and the distance from the computer to the meter is limited in practical


terms to around 30 meters (100 feet).

 Up to 32 meters can be connected on an RS-485 bus. The differential current drive of the RS-485 bus ensures signal integrity in the most harsh environments to distances up to 1230 meters (4000 feet). However, RS-485 generally requires a special RS-485 output card to be installed in the computer or an external RS-232 to RS-485 converter has to be used.

Select the Communication Mode Best Suited to Your Application:

Modbus (RTU)

Modbus is widely used in industry. It has a large base, and most SCADA and HMI software packages support it. See also Modbus Wrapped in Ethernet (Modbus/TCP) below.

 There are 100s of HMI Touch Panel Screens that are compatible with the Tiger 320 Modbus interface.

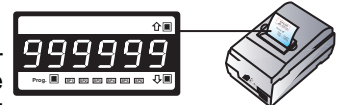



ASCII

The meter configuration utility program and the development software use the ASCII protocol. The ASCII protocol allows you to write your own driver for your own application via the development software and should provide the quickest development time.

Print Mode

This is an ASCII based printer driver output that enables the serial port to be directly connected to any serial printer with Epson compatibility. Printer output can be configured to occur from a setpoint or on demand, and can be date or time stamped.



 The print mode can also be used for computer data logging applications. The meter can be connected directly to a computer, set up in Microsoft Hyperterminal mode, with the meter programmed to output directly into a Microsoft Excel spreadsheet format. (Also see Data Logging).

Print Mode for Meter to Meter Communication

Two or more Tiger PMCs can be connected together allowing data to be transferred from the master meter (in print mode) to the slave meter (in ASCII mode). This enables the meters to share input data and control output functions.


Master Mode


This mode is for use with macro programming to expand the meter to meter communication capability to multiples of Tiger PMCs. This is useful for building an entire system of Tiger PMCs, sharing information and control output resources.


Ethernet

Ethernet has become a popular automation and control protocol. We supply an ethernet output option and several external ethernet converters that are compatible with the serial outputs of Tiger PMCs.



 **Ethernet ASCII Wrap** - The ethernet output carrier board option wraps the ASCII output into the Ethernet protocol, and provides a T-base 10/100 Ethernet output socket. This allows the Configuration Utility Program or the Macro Development Software to run over a standard Ethernet network. This enables the Tiger meter to be configured or macro programmed from anywhere in the world via the web.

 Up to 32 Tiger PMCs can be connected by RS-485 to a single Ethernet Converter, which will support up to 32 separate IP addresses.

 **Ethernet Modbus Wrap** - This converter accepts the Tiger PMC's modbus protocol and outputs Modbus/TCP through an Ethernet T-base 10 port. This has become a standard for Ethernet on the factory floor. Many SCADA and HMI software packages connect directly to Modbus/TCP.

Harnessing the Power of the Tiger 320

DeviceNet

DeviceNet was originally developed by Allen Bradley to connect sensors from the factory floor to PLCs. It is a deterministic real-time system, typically used to connect to networks using Allen Bradley PLCs. An optional carrier board is required for DeviceNet which replaces the standard serial output with a dedicated DeviceNet output connector.

Data Logging

The Tiger 320 Operating System has built-in, sophisticated data logging software. Data logging can be triggered from the PROGRAM button, digital inputs, time or alarm functions. Up to 1MB of optional extra on-board memory provides a powerful, multichannel data capture and acquisition system.

Tiger PMCs can be configured to log in an endless loop, overwriting the oldest data first and utilizing the maximum amount of memory available. Similar to the Black Box on an aircraft, the data can be downloaded for analysis after a problem event occurs.

Data logging can be combined with an Ethernet converter to provide an individual Web Page with data that can be accessed by a browser over the internet.

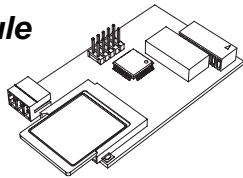
Real-time Clock

The Tiger meter has an optional real-time clock with a 15 year lithium battery backup, ensuring that time information is not lost in the event of a power failure. It can be configured in 12 or 24-hour modes for printing and data logging applications.

Other applications of the real-time clock include activating a setpoint or control action at fixed times of the hour, day, week, month or year.

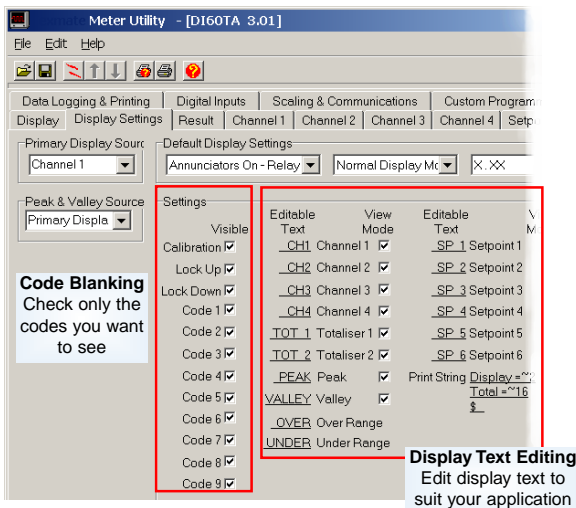
Flash Card Memory Module

For long term data logging, a Flash Card Memory Module that plugs in to the carrier board output socket is available. Flash Cards are available from 4 to 128 meg. They can be removed and read by a standard card reader, or the data can be downloaded through the serial port or over the internet with an Ethernet converter. The module also has an SSR setpoint output to trigger an external event.



Configuration and Programming with a PC

With a serial output module installed, Tiger 320 PMCs are most easily configured using the Tiger 320 Configuration Utility, which can be downloaded free from the web and run on any Windows-based PC. The utility also enables the user to access some special capabilities of the Tiger 320 which cannot be programmed manually by the front panel buttons.



The Configuration Utility requires that an RS-232 interface board be installed in a Tiger 320 for programming. However, if the final application does not require a serial output, the RS-232 board can be easily removed, after programming is completed, and kept for future use.

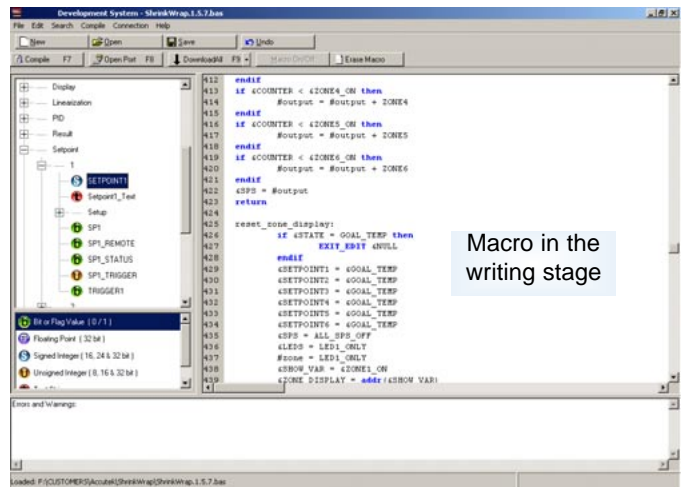
When a Tiger 320 is to be used in a custom application, the utility enables all or any of the front panel programming functions to be disabled (code blanking). Customized descriptive text can also be entered to appear with any setpoint action or event.

Different configurations can be stored in a PC for fast downloading into a meter by the user. Custom configurations can also be issued a serial number and pre-loaded at the factory.

Development Software

Custom Macro Programming

This powerful, easy to use development system enables programs to be written in BASIC, utilizing any combination of the hundreds of functions and thousands of registers embedded in the Tiger 320 Operating System. When your Basic program is compiled into the Tiger 320 Macro-language it is error checked and optimized. There are also numerous off-the-shelf application specific programs available. Many only need the blanks to be filled in to use them and do not require any knowledge of BASIC programming.



Macros are useful when implementing any specialized control system that cannot be achieved by the standard configuration capability of the Tiger 320 Operating System. Using the development software, functions can be altered or added in a standard meter to perform the required job. This may typically include logic sequencing functions and mathematical functions.

Developing a Macro is much easier and quicker than programming a PLC, because the basic code required to customize the Tiger meter is considerably less than the ladder logic programming required for PLCs. This is due to the hundreds of functions built into the Tiger meter that can be manipulated or invoked by a macro, to fulfill the requirements of almost any application.

Scrolling annunciator messages can be programmed to appear with any setpoint activation, selected events or logic inputs. Easy to read, plain text prompts can be programmed to replace the manual programming codes and provide a user-friendly interface for any custom application.





LCD Touch Screen HMIs

Multifunction HMI Touch Screen Control Panels interface with Tiger 320 PMCs for Stand-alone Applications or in combination with more than 100 popular PLCs

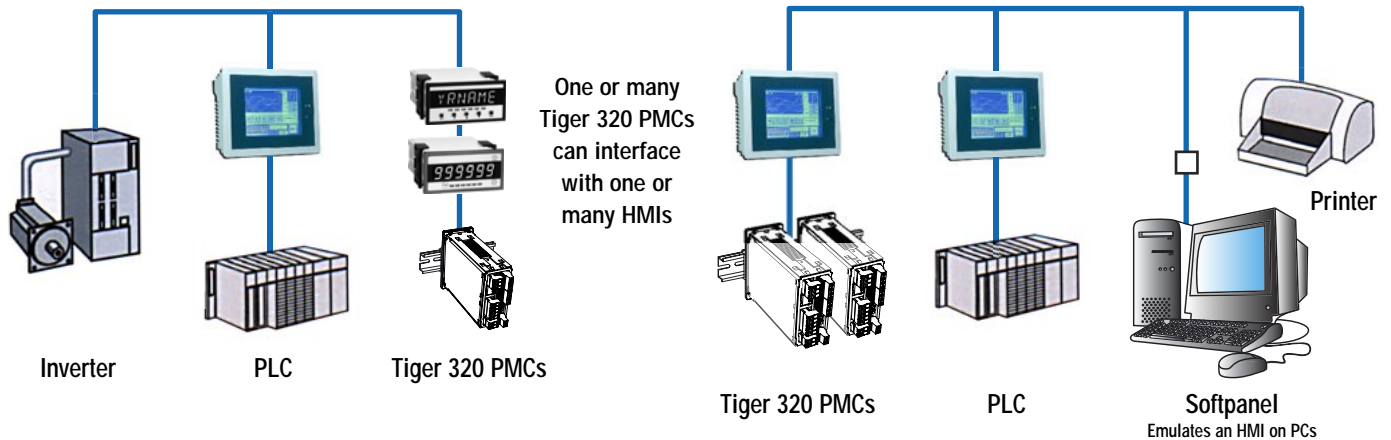
10.4" Color or Mono color



5.7" Color or Mono color



A cost effective Tiger 320 and an HMI Display can outperform most dedicated Paperless Recorders.

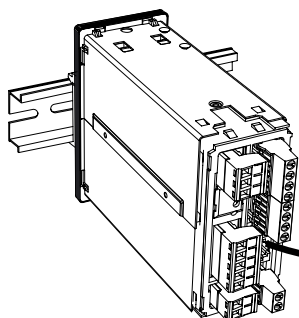


Use powerful, easy-to-program Tiger 320 PMCs, with our Hitech HMIs, to add 100s of functions, such as Temperature, Flow, pH, Rate, Position or Weight Checking, to your existing PLC-based Machine

OEM LCD MONO COLOR TOUCH SCREEN INTEGRATED WITH A TIGER 320 PMC

Tiger 320 PMC

Blue/White on Black or Black on Blue/White Display



Din Rail Mounting

Live Action Moving Elements Are Supported



Multi-page selection with dozens of active elements per page. Graphic elements are easily created in a popular HTML program, compiled in our development system and downloaded into the HMI.

Configuration Utility Software

The Easiest and Fastest Way to Configure the Tiger 320 is to Use a PC with the Free Downloadable Configuration Utility Program.

The diagrams and instructions provided in this data sheet / user manual are intended to enable the Tiger meter to be configured and programmed manually using the front panel buttons. A system of Programming Codes is required to facilitate this type of manual programming and these are explained in detail with diagrams and examples.

However, when the Tiger meter is configured and programmed via the optional RS-232 serial port and a PC using the Configuration Utility, the system of Programming Codes is bypassed. The Configuration Utility enables all the programming options to be clearly identified by their functions for direct on-screen selection. The Configuration Utility requires that an RS-232 interface board be installed in a Tiger 320 for programming. However, if the final application does not require a serial output, the RS-232 board can be easily removed, after programming is completed, and kept for future use.

The Configuration Utility Program (which may be freely downloaded from the web) is designed to simplify and speed up the configuration and programming of any Tiger 320. Pull down menus facilitate the selection of different options and the assignment of values. A "Help" explanation is provided just by holding the cursor over any function box.

The configuration utility enables the user to access some special capabilities of the Tiger 320 which cannot be selected manually by the front panel buttons.

Source For Display

- OFF
- Primary Display
- Result
- Channel 1
- Channel 2
- Channel 3
- Channel 4
- Totalisator 1
- Totalisator 2
- Peak
- Valley
- Tare
- Setpoint 1
- Setpoint 2
- Setpoint 3
- Setpoint 4
- Setpoint 5
- PID 1
- PID 2
- Register

Annunciators

- Annunciators On - Relay ON
- Annunciators On - Relay OFF
- Annunciators OFF
- Annunciators show tendency

Display Mode

- Normal Display Mode
- 12 Hour Clock
- Manual Display Mode
- Fast Display Mode

Decimals and Display Format

- No decimal point
- X.X
- X.XX
- X.XXX
- X.XXXX
- X.XXXXX
- External decimal point
- 24 Hour Clock
- Hrs : Mins : Secs
- Days : Hrs : Mins : Secs

Last Digit Rounding

- None
- 0 x
- 5 x
- 10 x

Right Hand Side Character

Source For Peak and Valley

- OFF
- Primary Display
- Result
- Channel 1
- Channel 2
- Channel 3
- Channel 4
- Totalisator 1
- Totalisator 2
- Peak
- Valley
- Tare
- Setpoint 1
- Setpoint 2
- Setpoint 3
- Setpoint 4
- Setpoint 5
- PID 1
- PID 2
- Register

Code Blanking

Check only the codes you want to see

Display Text Editing

Edit display text to suit your application

Code Blanking

When a custom configuration is created for any specialized application, the Tiger 320 can be programmed to blank out and disable all or any manual programming codes that you do not wish the user to be able to view or access by de-selecting them in the appropriate check box.

Display Text Editing

The meter can be programmed to display customized text to appear for any setpoint or event to suit any application requirements.

Apply 125 point Table to:

Result Channel 1 Channel 2

Table 1	Table 2	Table 3	Table 4
Date (YYWW)	Date (YYWW)	Date (YYWW)	Date (YYWW)
9932	9932	9932	9932
Serial No. 1	Serial No. 2	Serial No. 3	Serial No. 4
1 Input Output	1 Input Output	1 Input Output	1 Input Output
2 10000 10000	2 10000 10000	2 10000 10000	2 10000 10000
3 20000 20000	3 20000 20000	3 20000 20000	3 20000 20000
4 30000 30000	4 30000 30000	4 30000 30000	4 30000 30000
5 40000 40000	5 40000 40000	5 40000 40000	5 40000 40000
6 50000 50000	6 50000 50000	6 50000 50000	6 50000 50000
7 60000 60000	7 60000 60000	7 60000 60000	7 60000 60000
8 70000 70000	8 70000 70000	8 70000 70000	8 70000 70000
9 80000 80000	9 80000 80000	9 80000 80000	9 80000 80000
10 90000 90000	10 90000 90000	10 90000 90000	10 90000 90000
11 100000 100000	11 100000 100000	11 100000 100000	11 100000 100000
12 110000 110000	12 110000 110000	12 110000 110000	12 110000 110000
13 120000 120000	13 120000 120000	13 120000 120000	13 120000 120000
14 130000 130000	14 130000 130000	14 130000 130000	14 130000 130000
15 140000 140000	15 140000 140000	15 140000 140000	15 140000 140000

Easy Installation of Linearization Tables

The configuration utility facilitates the storage and downloading of complex linearization tables. Tables can be created in any mathematical or spreadsheet program, and copied into the utility. Linearization tables can be created to precisely match a particular sensor so that they can be installed and downloaded as part of an annual calibration procedure.

Source For Setpoints 1-6

- OFF
- Primary Display
- Result
- Channel 1
- Channel 2
- Channel 3
- Channel 4
- Totalisator 1
- Totalisator 2
- Peak
- Valley
- Tare
- Setpoint 1
- Setpoint 2
- Setpoint 3
- Setpoint 4
- Setpoint 5
- Setpoint 6
- PID 1
- PID 2
- Register

Destination

- OFF
- Display
- Result
- Channel 1
- Channel 2
- Channel 3
- Channel 4
- Totalisator 1
- Totalisator 2
- Peak
- Valley
- Tare
- Setpoint 1
- Setpoint 2
- Setpoint 3
- Setpoint 4
- Setpoint 5
- Setpoint 6
- PID 1
- PID 2
- Register

Latching For Setpoints 1-6

Latch ON Latch OFF

Activation For Setpoints 1-6

Manual Relay Reset Manual Relay Resol Manual Relay Resol Manual Relay Resol Manual Relay Resol Manual Relay Resol

Startup Inhibit Startup Inhibit Startup Inhibit Startup Inhibit Startup Inhibit Startup Inhibit

Mode For Setpoints 1-6

Mode OFF

Timer For Setpoints 1-6

Timer Resolution Resolution Resolution Resolution Resolution Resolution

Time (s) OFF OFF OFF OFF OFF OFF

Reset Mode

Reset Value Constant Input-SP+Const. Dest+Const. Display Result

Easy Setpoint Configuration

The Tiger 320 supports an incredible range of setpoint options and functions. The utility makes it quick and easy to select and download any combination you may require.

Configuration Data Copying and Loading

The configuration utility program allows you to store a record of a meter's configuration for later referral, or for the restoration of a desired configuration. Macros can be combined with a configuration file so they can be downloaded together and locked at the same time. When a file is locked after downloading, it cannot be copied. It can only be erased and reloaded from a master file.

Also included is the ability for the user to make notes about the configuration that can be stored as part of the file.

Custom Macro Programming

Never Before has the Customization of such a Powerful Measurement, Control and Automation Product been Made so Fast, Free and Easy.

The Tiger 320 Macro Development System is so power packed and feature rich that you can build a completely custom designed controller in 1/50th of the time it would take to program a microprocessor or a PC, and 1/20th of the time it can take to program a PLC.

Quickly convert any special metering or control and automation idea into your own proprietary product, CE approved and ready to ship in days, with custom multicolor faceplates, labels, shipping boxes and instruction manuals.

This powerful, easy to use Development System enables programs to be written in BASIC which can utilize any combination of the hundreds of functions and thousands of registers embedded in the Tiger 320 Operating System.

When your BASIC program is compiled into the Tiger 320 Macro-language it is error checked and optimized. When your Macro is downloaded into a Tiger 320 and locked, it is locked forever. It cannot be read or duplicated, it can only be erased. There is no back-door access. A Tiger 320 running your Macro will remain your exclusive proprietary product.

There is also a growing library of off-the-shelf application specific macro programs available. Many only need the blanks to be filled in to use them and this does not require any knowledge of BASIC. The source code is provided with these programs so they can easily be customized and/or integrated into any proprietary application-specific Macro.

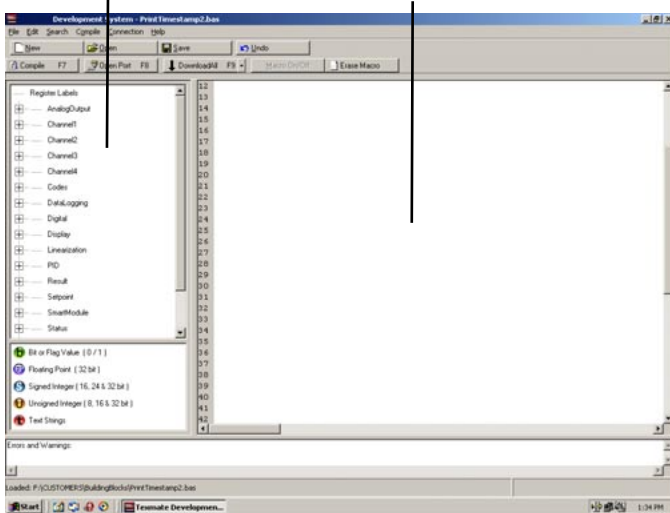
On request, any custom Macro can be issued a serial number and pre-installed at the factory to operate on power-up.



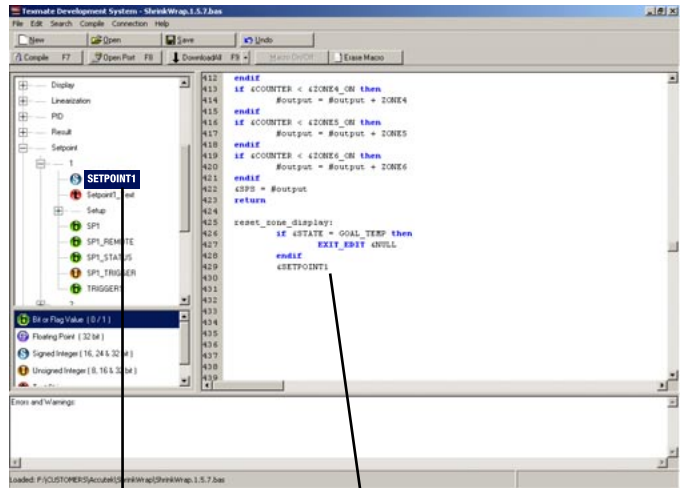
Scrolling annunciator messages can be programmed to appear with any setpoint activation, selected events or logic inputs. Easy to read, plain text prompts can be programmed to replace the manual programming codes and provide a user-friendly interface for any custom application.

Tiger Development System - Code Writing Screen

Register Labels Code Writing Area



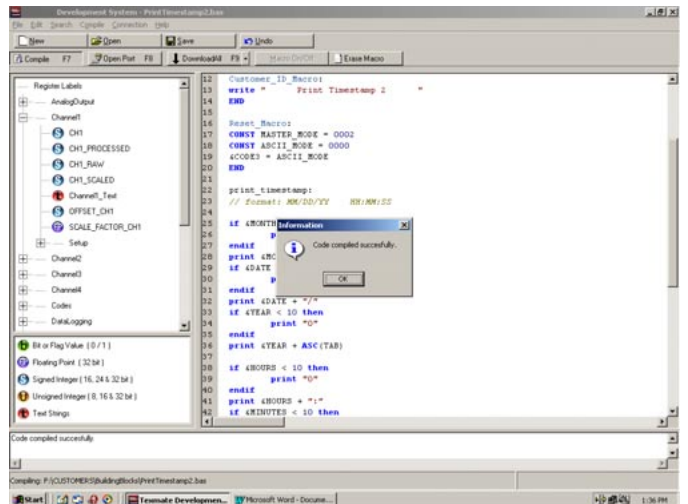
Tiger Development System screen showing Macro being written.



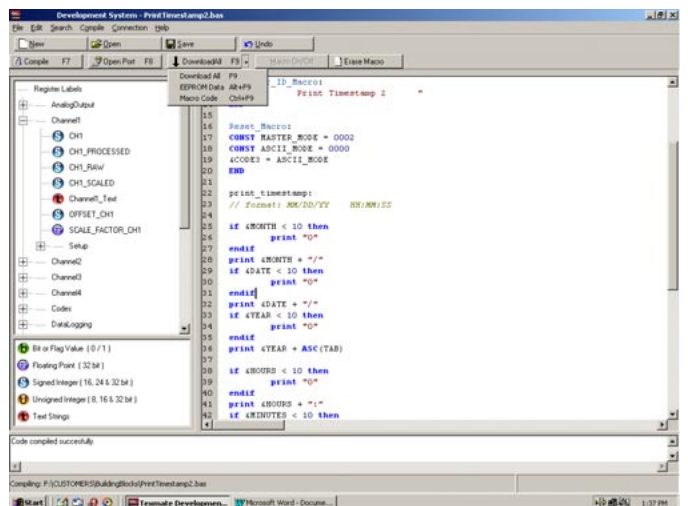
Double clicking on register label in the left hand side frame

automatically inserts the function in the code window at the cursor insertion point.

Tiger Development System screen showing the Macro code being compiled successfully.






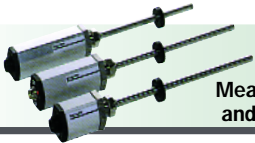






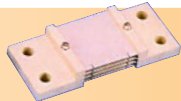









Tiger Development System screen showing the compiled Macro being downloaded into a Tiger 320 Series PMC.



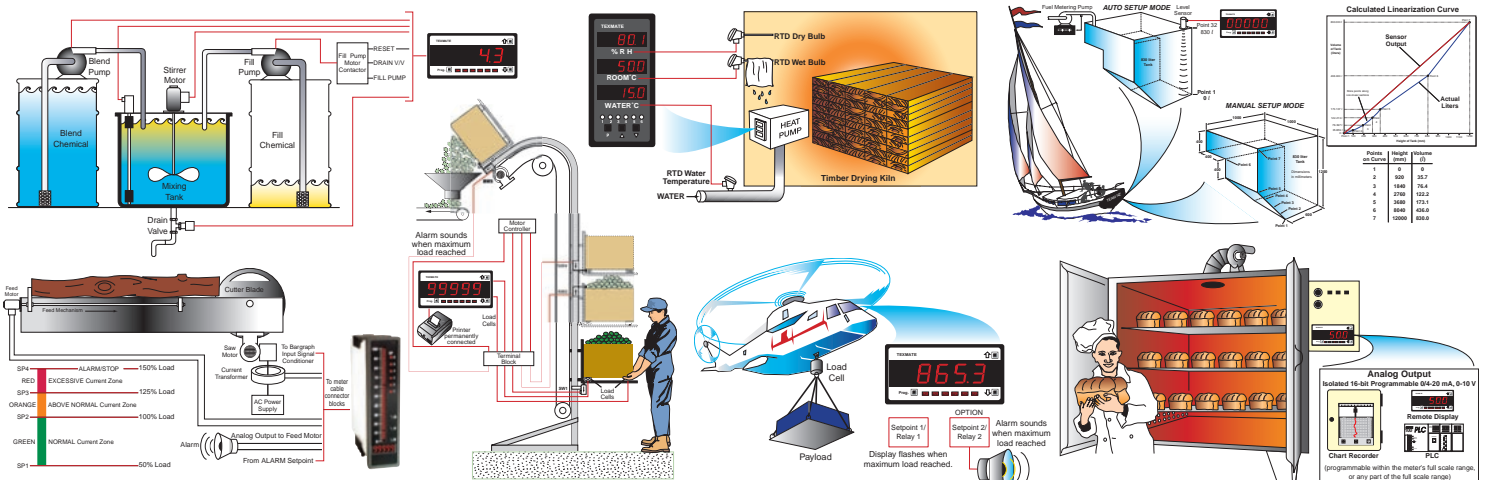
Super-Intelligent Tiger 320 Programmable Meter Controllers Enable All Types of Sensors to Accurately Outperform Themselves

Large batches of sensors can be simultaneously profiled and calibrated from one input source by connecting the sensors to Tiger 320s programmed to measure all the multiple variables applied during calibration. Digital linearizing tables and multi-variable compensating factors for each individual sensor, can then be automatically calculated and downloaded into each Tiger 320's memory, along with a date and the sensor's serial number. The performance of many sensors can be greatly enhanced just with individual linearity and temperature compensation. However, the multiple input modules of the Tiger 320 series enable com-

ensation of many other variables such as frequency, opacity, pressure, pH and viscosity. The Tiger 320 Macro-language software supports complex three dimensional linearizing, and can even provide compensation for long term aging. Time-for-calibration messages can be programmed to display from a setpoint connected to the real-time clock. Sensors can be precalibrated in the factory for installation in the field and their updated compensation factors can then be downloaded into the Tiger 320 by PC or even directly over the web.

	Infrared Emissivity Compensation and Linearization		Conductance and pH with Chemical and Biological Linearization and Compensation	
	LVDT, LDT & MDT Position & Displacement Measurement with Linearization and Temperature Compensation		Flow Calculation and Compensation BTU, Viscosity, and Mass	
	Torsion Load Measurement with Linearization		Strain and Weight with Linearization, Autotare, and Smart AutoZero Maintenance	
	CT or Shunt Linearization and Temperature Compensation with patented True RMS Conversion for Precision AC or DC Watts		Pressure Transducer Compensation and Linearization for Complex Volume Measurement	
	Semiconductor Near-Vacuum Precision Sensor Compensation		Ultrasonic Sensor Compensation	
	Pulse Inputs for Frequency RPM Batch Count and Linearization		Quadrature Inputs from Encoders for Up/Down and Position	
			Mass Air Flow and Velocity	
				Environmental Emission Gas Sensor Linearization

Measure, count, time, digitize, linearize, compensate, calculate, compare, accumulate, integrate, annunciate, display, control, record, report and automate any process, in any industry, from any sensor, with the fantastic Texmate Tiger 320 Series of Programmable Meter Controllers.



- 1 Display Text Editing.
- 14 Bag Filling Machine using Load Cell Input.
- 15 AC Current Measurement with Load Control.
- 16 pH Control using the Tiger 320 Series.
- 17 DC Amps and Amp / Hr Controller for the Electro Plating and Chemical Processing Industry.
- 18 Motor Generator Room Ventilation Control.
- 19 Fruit Weighing Application.
- 20 Watt / Hour Appliance Test Meter.
- 21 Cut to Length Controller.
- 22 Weigh and Ratio Batching Application for the Chemical Industry.
- 23 Linearize Yacht Fuel Tank Application.
- 24 Press Control Peak Overload Application.
- 25 Can Label Glue Application Machine.
- 26 Text Messaging and Tank Level Application.
- 27 Boiler Energy Calculation Macro.
- 28 Gas Cylinder Filling System using a Pressure Transducer.
- 29 Beam Stress Test.
- 30 Autotare to obtain Payload from a Weighbridge.
- 31 DC Watt Hours or Kilowatt Hours Measurement and Control with Data Logging.
- 32 Precision Low Resistance Measurement with Temperature Compensation.
- 33 Dispense Tank Product by Weight.
- 34 Single Phase Measurement and Control.
- 35 Melt pressure Sensors with Shunt Calibration Option.
- 36 Smart Rain Monitor and Irrigation Controller.
- 37 Filling Application using Load Cell Input.
- 38 Dual Tank Level Annunciator-Controller.
- 39 Irrigation Scheduling Controller.
- 40 Heat Exchanger with Heating / Cooling Cycle Control.
- 41 Weighing Application with Zero Offset Limit.
- 42 Smoke Density and Temperature Monitor.
- 43 Test Rigs for Quality Control Applications.
- 44 Peak Demand.
- 45 Flow Rate and Total Flow Measurement.
- 46 Greenhouse Ventilation Controller.
- 47 Greenhouse Multi Channel Ventilation Controller.
- 48 Dual Load Cell Pinch Roll Feeder Application.
- 49 Bubbler System Level Measurement Application.
- 50 Resin to Roving Ratio and Progress Monitoring System for the Composite Industry.
- 51 O₂ Measurement Using a Zirconia Sensor.
- 52 Bubbler System Flow Measurement Application.
- 53 Motor Generator-Set Frequency Control.
- 54 Steam Sterilizer / Autoclave Controller.
- 55 Wet / Dry Bulb Humidity Measurement and Control.
- 56 Manual Station.
- 57 Auto Manual Station.

APPLICATION NOTES

1

Display Text Editing.

Tiger 320 Series meters provide the users with static display text messaging. Display text can be easily edited to suit your application. Scrolling display text messaging requires a simple compiler generated macro.

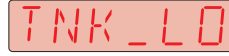
14-segment alphanumeric display options provide greater legibility than 7-segment options. For example, a setpoint could be edited to read for "tank level low" as:

7-SEGMENT



or

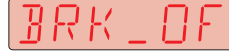
14-SEGMENT



or for "brake off" as:



or



7-SEGMENT DISPLAY CHARACTERS

tNK_L		on	
1	A	E	U
2	b	L	U
3	C	P	U
4	d	n	U
5	E	o	Y
6	F	P	2
7	G	o	
8	h	r	
9	i	S	
0	J	t	

ALPHANUMERIC DISPLAY CHARACTERS

TEXT				ON			
1	A	K	U				
2	B	L	V				
3	C	M	W				
4	D	N	X				
5	E	O	Y				
6	F	P	Z				
7	G	Q					
8	H	R					
9	I	S					
0	J	T					

Examples of Scrolling Displays:



7-Segment range:

DI-50, DI-60, DI-503, DI-50AN6, DI-50B51
GI-50, GI-50B51,
FI-B101D50

14-Segment range:

DI-60A, DI-60AT5C

Our customer manufactures machines for loading produce into bags at preset weights. A conveyor carries the produce to the bag. The conveyor speed controller slows the conveyor when the bag nears the required weight. The bag is hung from a load cell which feeds the weight to the Tiger 320 meter controller. When the bag is near the required weight, a setpoint in the meter slows the conveyor. When the bag reaches the required weight, the meter automatically compensates for produce inertia and determines when to stop the conveyor and close the conveyor feed gate. The display flashes between 'BAGFUL' and 'WEIGHT'.

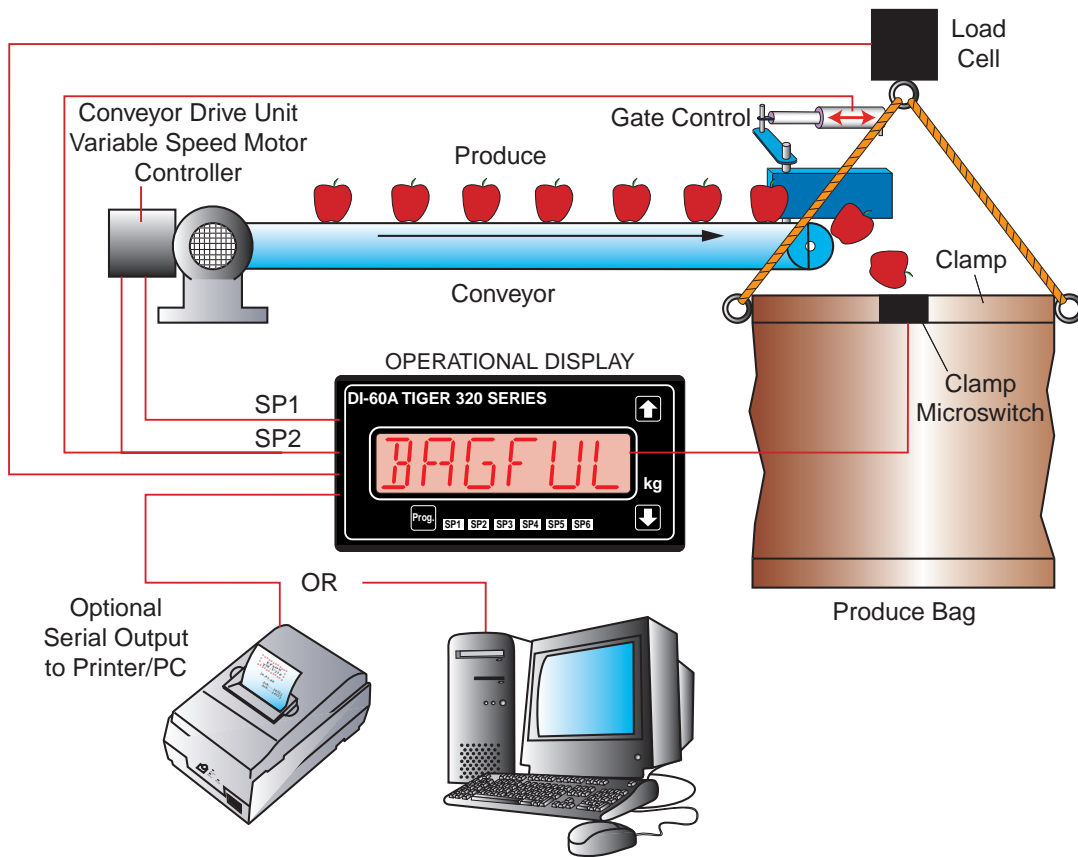
The operator unclamps the bag, and the meter counts and totalizes the bag number from the bag clamp microswitch pulse. The operator fits a new bag and the clamp closes after a 1 second delay to stabilize the load cell.

The operator tares the load cell input to 0, canceling the empty bag weight. The fill cycle restarts. All program functions not used are blanked out and the setpoints are titled for ease of operation.

Note: This customer was originally using a panel meter, a PLC and a motor drive for this application. Using Texmate's Tiger 320 Series controller, a PLC is no longer required saving both cost and time in manufacturing.



BAG FILLING MACHINE USING LOAD CELL INPUT



APPLICATION FUNCTIONS	
APPLICATION SPECIFIC MACRO	
RELAY OUTPUTS	
TIMERS	

REGISTER RESETS	↑ ↓
TOTALIZERS	+ -

SEQUENCE CONTROLS	
-------------------	--

TEXT MESSAGING	
----------------	--

INPUTS	
STATUS	

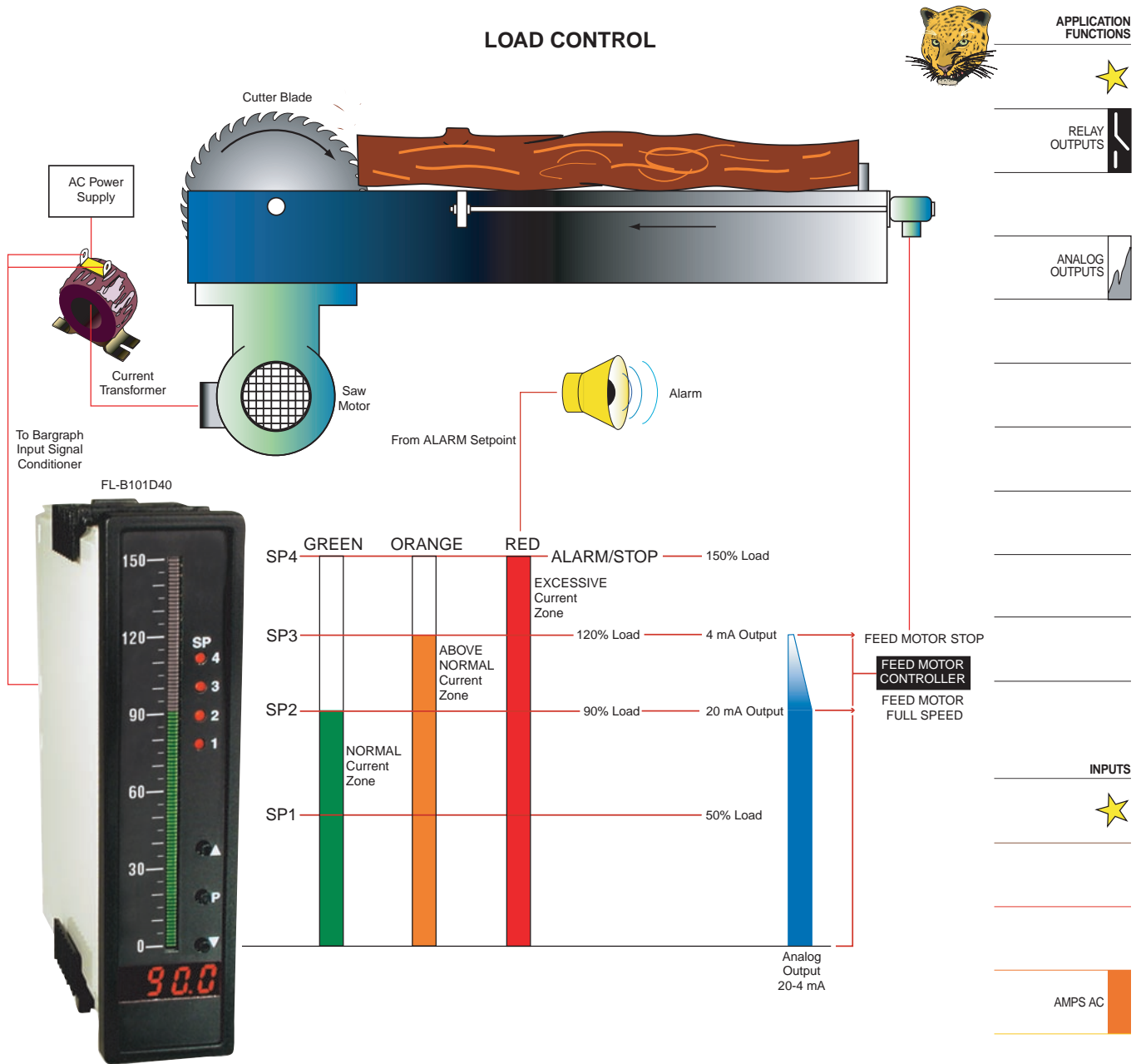
LOAD-CELL PRESSURE	
--------------------	--

APPLICATION VARIATIONS

- The total bag numbers can be set, and the machine stopped at a set total.
- Proportional start up and slow down.
- If the serial card is installed into the meter controller, the total product weight, number of bags, date and time information can be sent to a printer or a computer for customer receipt and production records.

Our customer has a large log saw with a log feed motor and requires to optimize efficiency of the cutting operation. The log feed motor speed is controlled by the 4-20 mA output scaled from the saw blade motor current. As the saw motor load increases above 90% load, the log feed motor slows. If the load increases above 130%, the **feed motor** stops. If the load increases to 150%, the **saw motor** stops.

The motor load is represented on the tri-color bargraph. The bargraph scale indicates 1% steps in motor current, and changes from green to orange at 90% load and orange to red at 120% load. The digital display indicates saw motor amps.



APPLICATION VARIATIONS

- 4 relay setpoints can be individually programmed to activate above or below the setpoint setting.
- Setpoints can be programmed with delay-on-make and delay-on-break time delay settings.

The customer has an application that requires to:

- Display Amps from a DC shunt.
- Display and control from dual totalized amp/hrs.

The amp/hrs from totalizer 1 operate Setpoint 1.

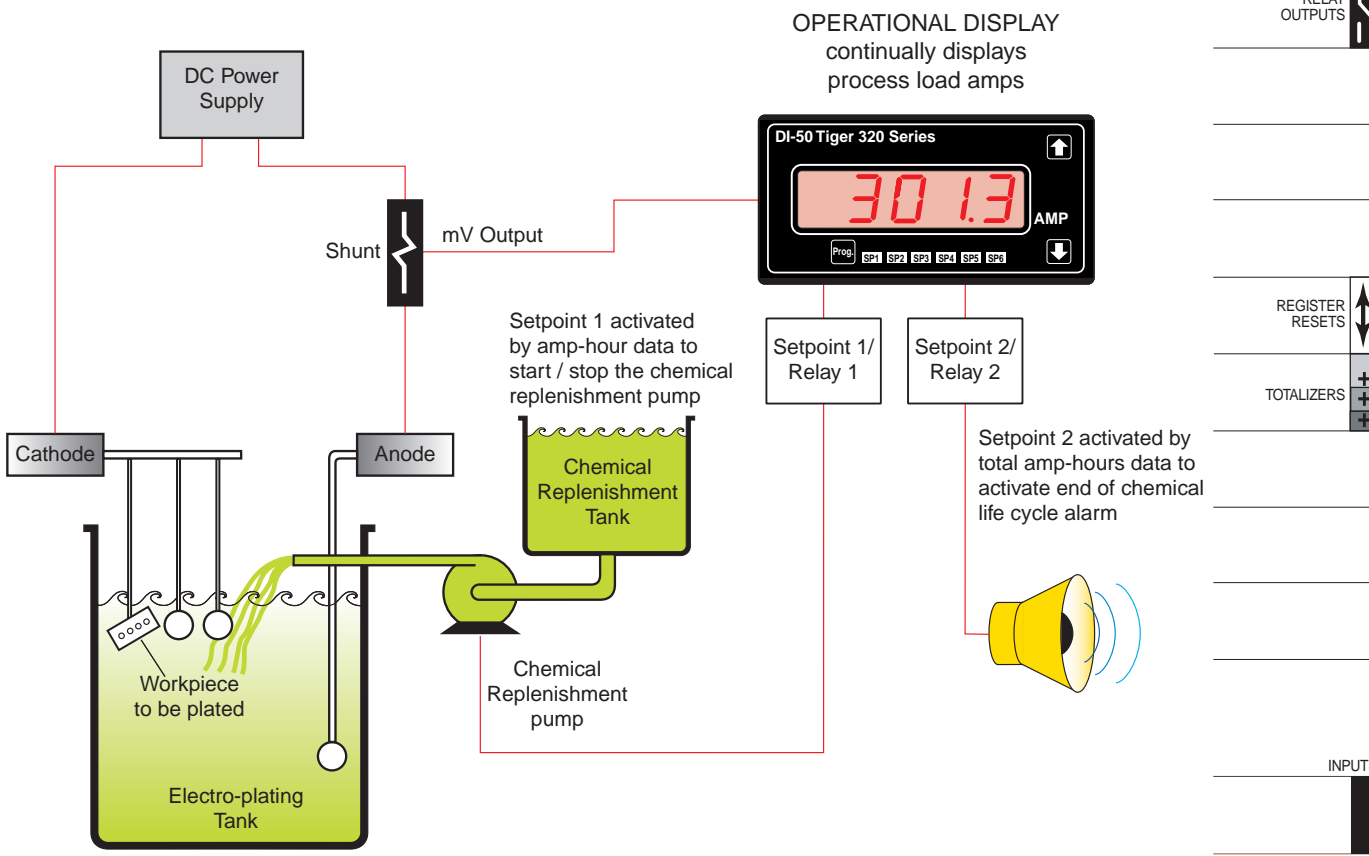
At programmed amp/hr intervals, a pump starts for a programmed On-time to pump replenishment chemicals to the plating tank.

When Setpoint 1 energizes, totalizer 1 resets to 0, the pump cycle starts, and the amp/hrs totalizer 1 restarts.

The amp/hrs from totalizer 2 operates Setpoint 2.

The chemical has a total life cycle calculated in DC amp/hrs, Setpoint 2 operates an alarm advising the operator when the chemical life has been exceeded. When the chemical is changed a reset button is pressed and totalizers1 and 2 are reset to 0.

ELECTRO PLATING AND CHEMICAL PROCESSING



APPLICATION VARIATIONS

- Scroll **CHANGE CHEMICAL CAL** across display.
- Scroll **REPLENISHMENT On** across display.
- Use 6 digit alpha numeric display for better legibility.
- Operational Display "flashes" when replenishment pump On.
- Temperature control.
- Individual job Amp Hrs On time.
- Automate process On time and wash cycle.
- Use Texmate DI-503 three display controller.

APPLICATION FUNCTIONS

RELAY OUTPUTS

REGISTER RESETS

TOTALIZERS

INPUTS

VOLTS DC MV

AMPS DC

18

Motor Generator Room Ventilation Control.

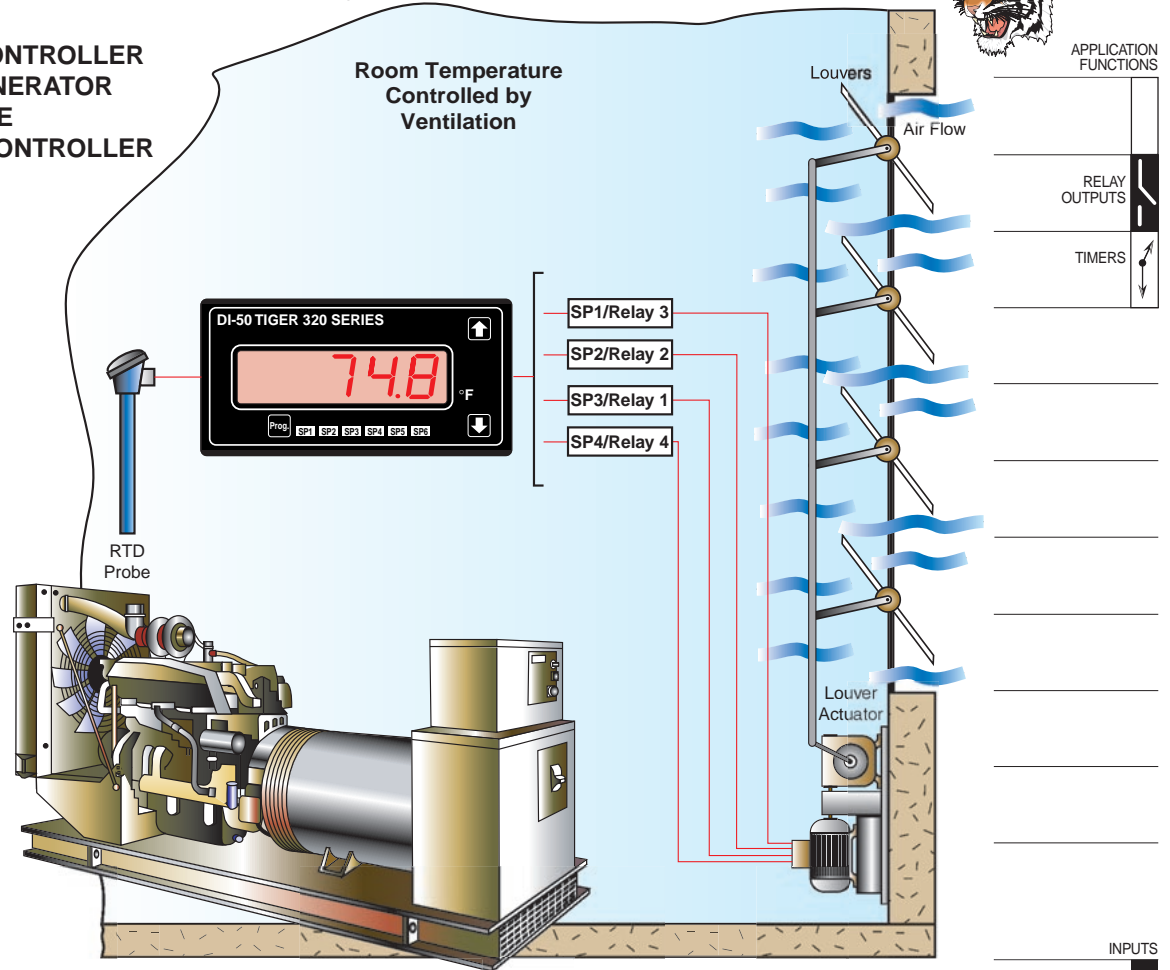
Our customer has a motor generator in a large room. The room temperature is controlled by opening and closing ventilation louvers using a forward and reverse motor. When the temperature rises above the setpoint, the louver actuator motor operates for a programmed ON-time opening the louvers 10 degrees. After a programmed OFF-time, if the temperature is still above the high setpoint, the louvers open in 10 degree

increments until the temperature falls below the high setpoint. If the temperature in the room falls below the low setpoint, the louvers progressively close keeping the room temperature within acceptable limits.

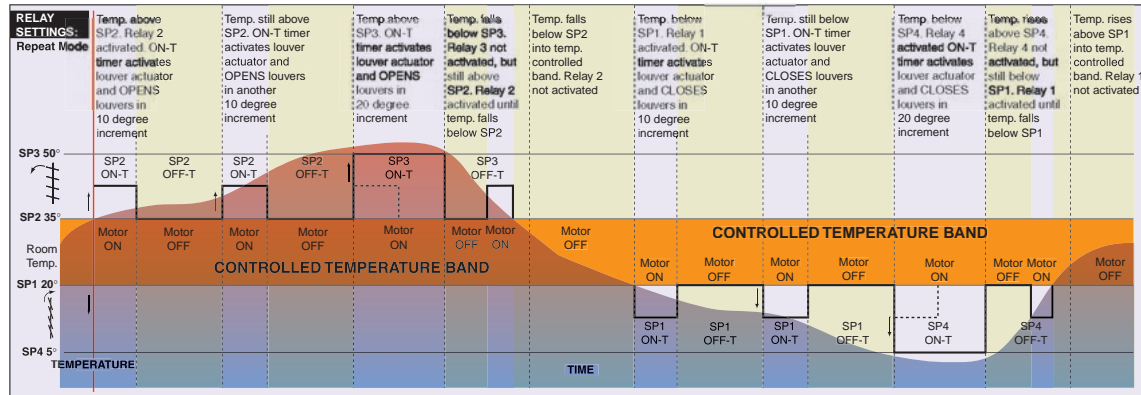
Note: The relays are programmed in the repeat mode (programmable ON/OFF-time).



VENTILATION CONTROLLER FOR MOTOR GENERATOR ROOM USING THE DI-320 SERIES CONTROLLER



Logic diagram showing temperature above and below controlled temperature band



APPLICATION VARIATIONS

- Multi RTD for temperature alarms.
- Status inputs for control alarms.
- Motor run time.
- Data log generator START/STOP-time & other relevant data.

TEMPERATURE T/C, RTD

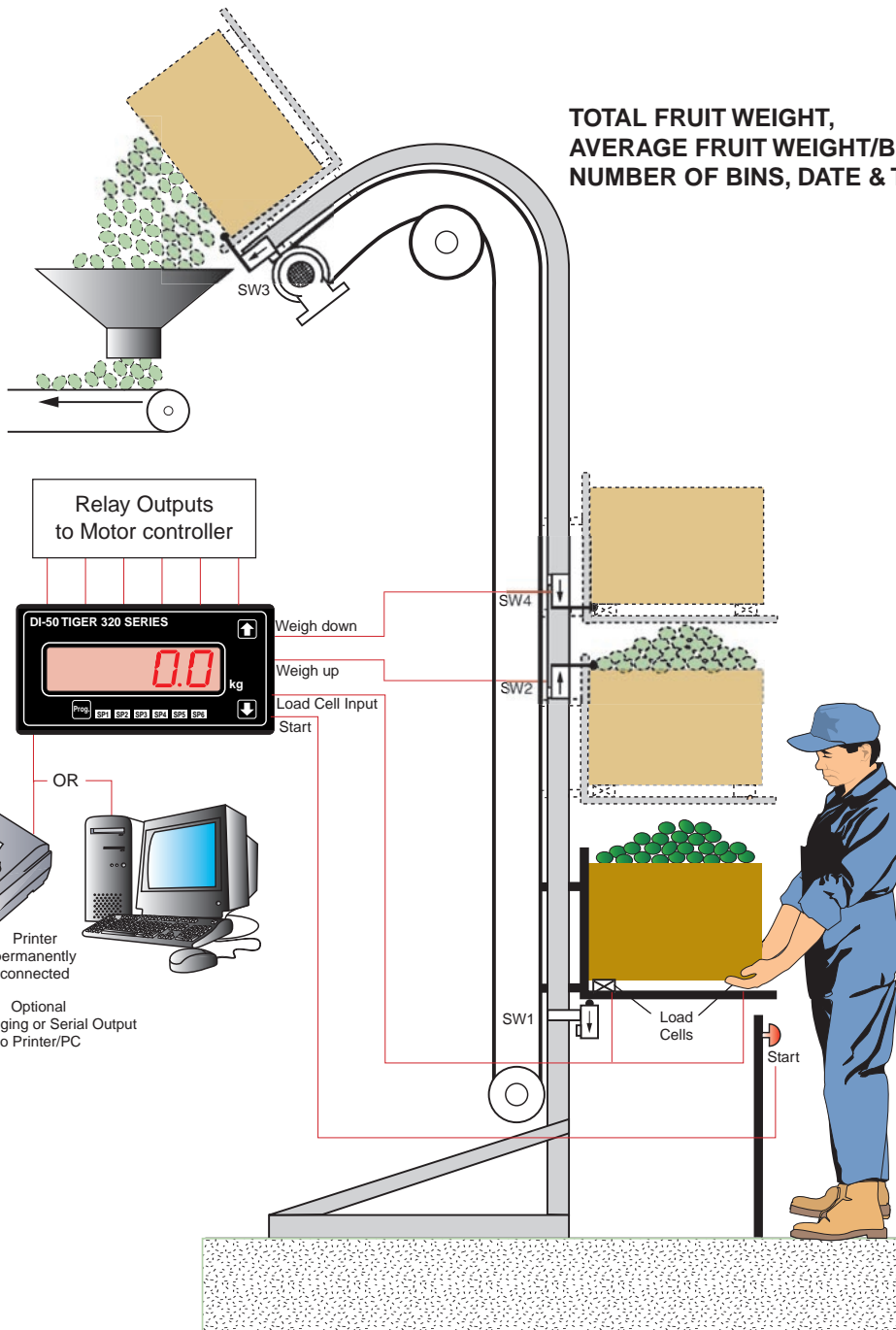
19 Fruit Weighing Application.

Our customer operates a fruit packhouse. His customers deliver their fruit in large bins for grading, packing and distribution. The full bins are loaded onto a conveyor and then transferred to a load cell weighing platform.

The bin raises to a weigh position and then stops. After a 1 second delay (load cell to stabilize) the full bin is weighed. The bin then raises and tips the produce onto a second grading conveyor. The bin then returns to the load cell weigh position and stops. After a 1 second delay the empty bin is weighed.

The Tiger 320 Series controller subtracts the empty bin weight from the full bin weight. The result is the fruit weight. The bin number is counted, the fruit weight is added to the total fruit weight and the average fruit weight per bin is calculated.

A serial printer connected directly to the Tiger controller RS-232 serial port prints a receipt detailing the day:month:year, hrs:mins:sec, number of bins, total fruit weight and average fruit weight per bin.



**TOTAL FRUIT WEIGHT,
AVERAGE FRUIT WEIGHT/BIN,
NUMBER OF BINS, DATE & TIME**

APPLICATION FUNCTIONS	
APPLICATION SPECIFIC MACRO	
RELAY OUTPUTS	
TIMERS	
PRINTER OUTPUTS	
CALCULATIONS	
SEQUENCE CONTROLS	
TEXT MESSAGING	
INPUTS	
STATUS INPUTS	
LOAD-CELL PRESSURE	

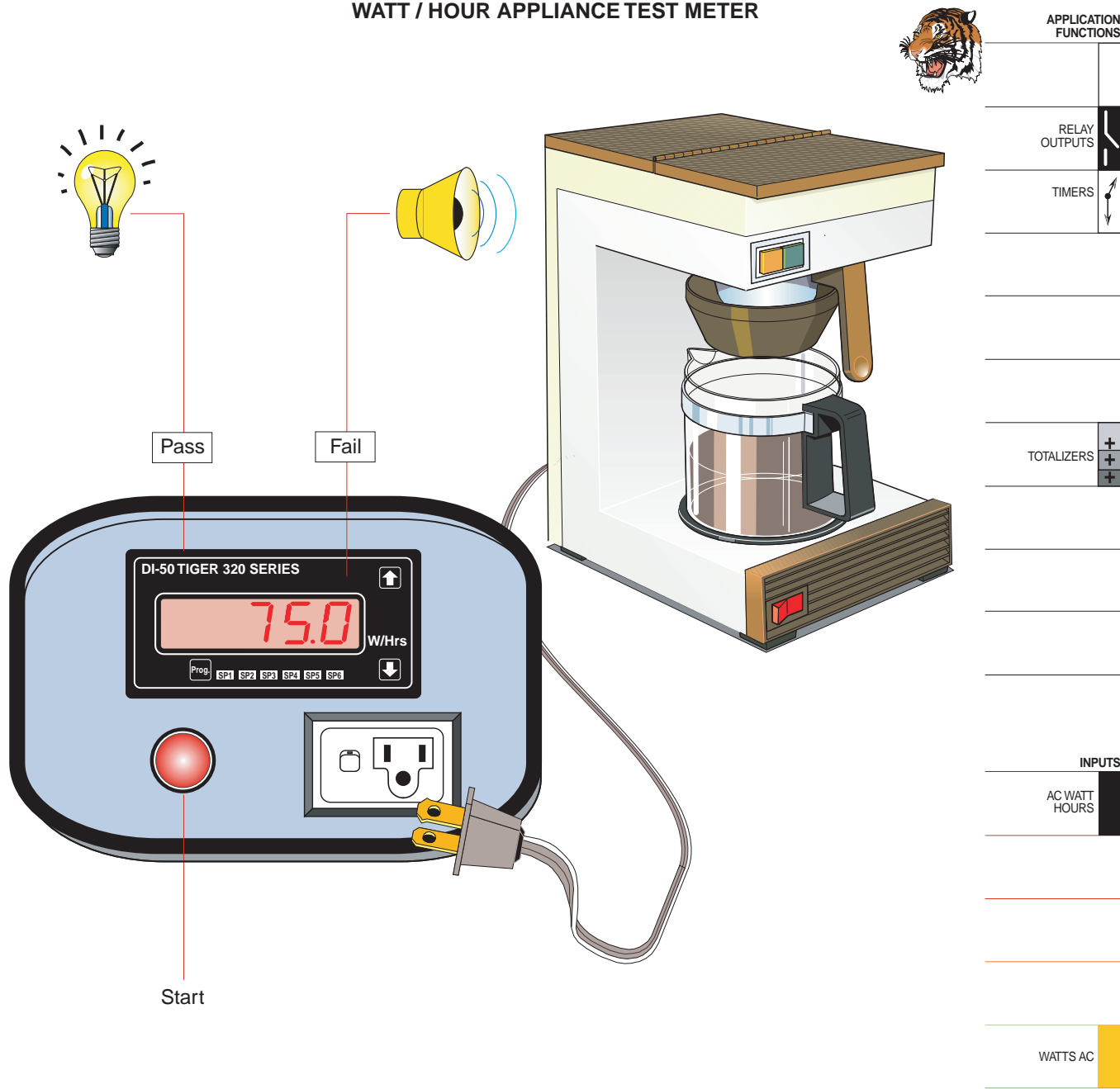
APPLICATION VARIATIONS

- Use 6 digit alphanumeric display for improved operator instruction and legibility.
- RS 232 output to computer for analysis and production records.

Our customer requires a quality control test for watt/hour rating of electrical appliances. The test is carried out over 5 minutes. A Texmate DI-50E meter with a watt input module is installed. The meter is programmed to totalize the watt/hours when the start button is pressed. The meter totalizes the watts for 5 minutes and the watt/hour rating is held on the display.

When the next appliance is connected, the start button is pressed, the meter is reset to 0 and counts the watts for 5 minutes again. A setpoint is programmed in the deviation mode to indicate PASS/ FAIL. The appliance ON-time is programmable to suit your application.

WATT / HOUR APPLIANCE TEST METER



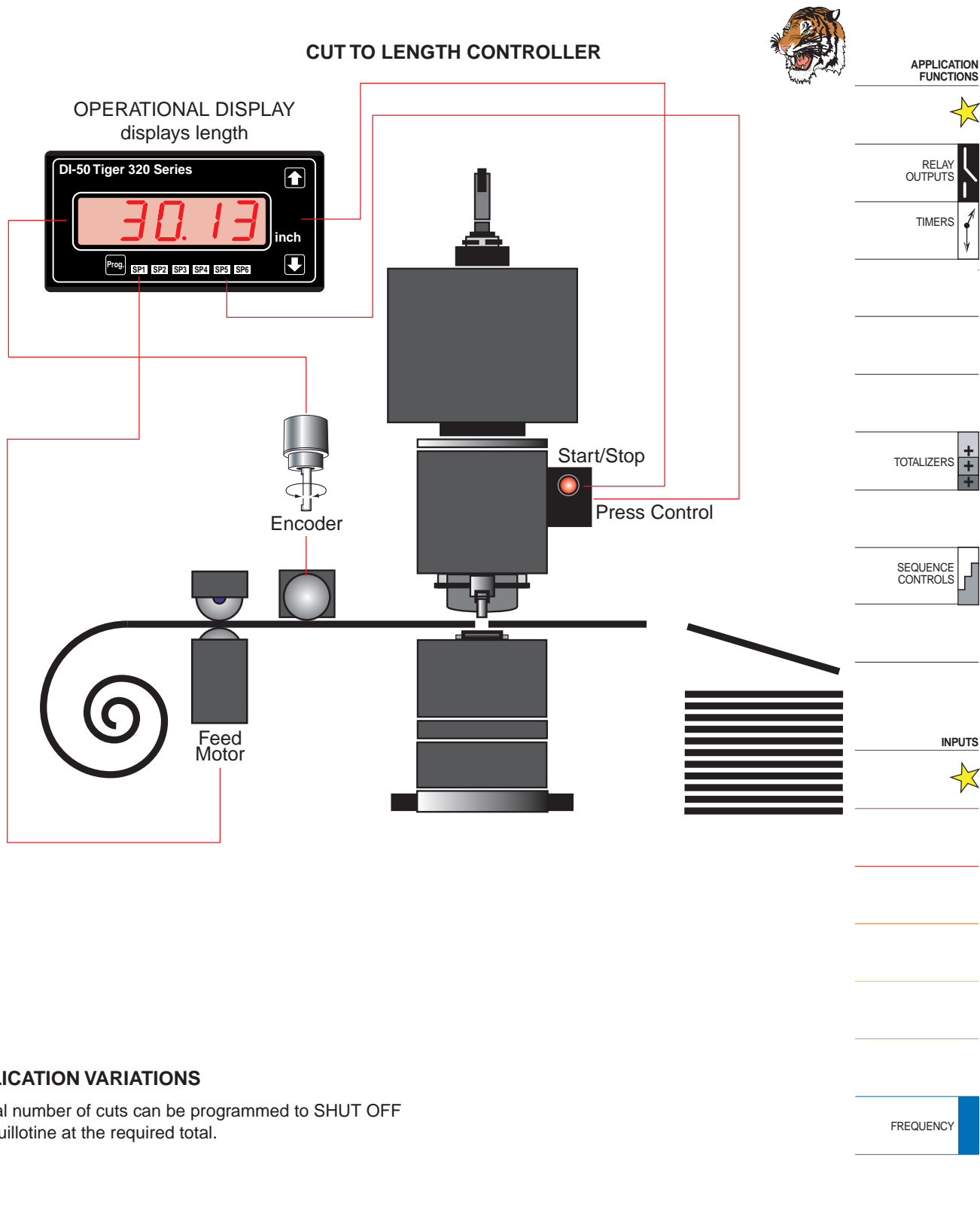
APPLICATION VARIATIONS

- Print quality control receipt.
- RS 232 output to computer for PASS/FAIL analysis for production records.
- For current applications above 5 A, a current transformer is required.

21 Cut to Length Controller

Our customer operates an automatic cut-to-length guillotine. A Texmate 320 Series programmable meter controller has been installed and programmed to measure length from an encoder input. Setpoint 1 is programmed to operate at the required cut-off length. A clutch and a clamp operate to stop the metal feed motor.

After a programmed OFF-time, (to enable the guillotine to complete its cut cycle) the displayed length is reset to 0. The clamp releases, the clutch engages, and the metal commences feeding, repeating the process. At each cut-off, 1 is added to a totalizer. (Viewed by pressing the UP button.)



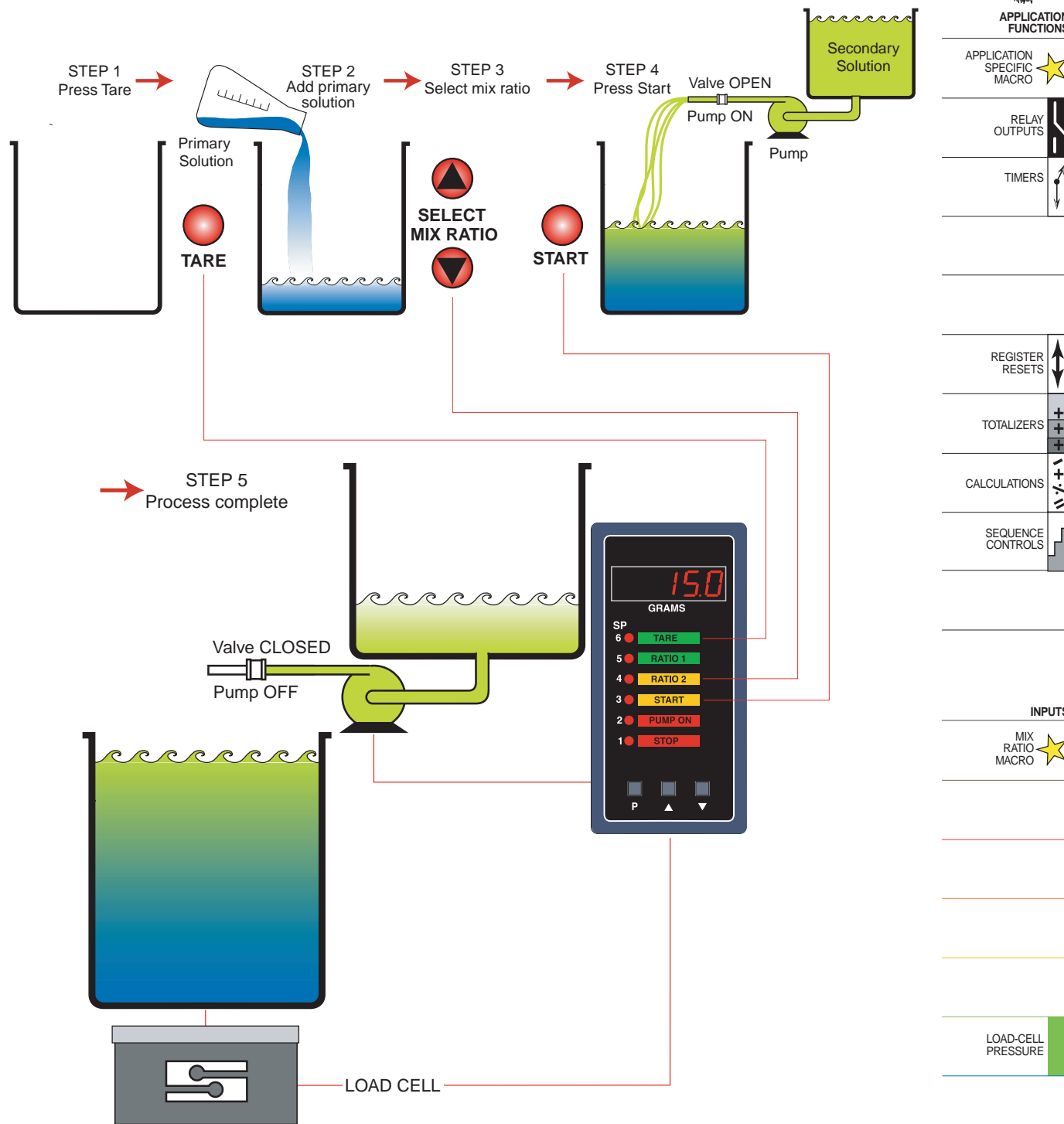
APPLICATION VARIATIONS

- A total number of cuts can be programmed to SHUT OFF the guillotine at the required total.

Our customer requires varying amounts of primary and secondary chemicals to be mixed by ratio. To improve mixing, accuracy and save time, the ratio calculation is automatically performed by a macro.

A container is placed on a weighing platform and the platform is tared to 0. The primary product is poured into the container. The operator enters the required mix ratio and presses the start button.

A setpoint starts the secondary chemical blend pump. When the secondary product is close to the calculated mix weight ratio, the setpoint pulses the blend pump motor until the calculated weight is reached. The pump stops and is latched OFF. The display flashes to indicate the process is complete.



APPLICATION VARIATIONS

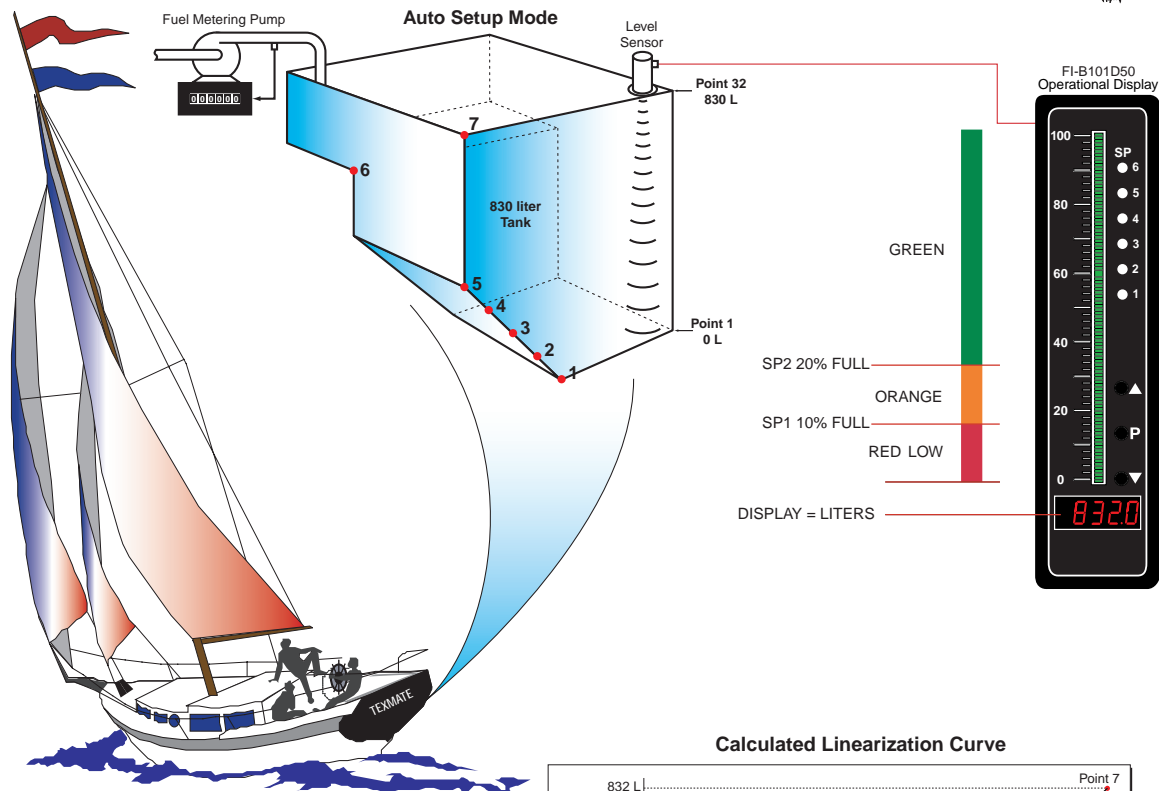
- Automate complete process.
- PID-OFF control. Secondary solution pump.

A boat builder requires to display the amount of fuel in an irregular shaped tank using a level sensor. As the output from the level sensor is not linear, a bargraph programmable meter controller is installed to linearize the signal. The digital display shows the amount of fuel in liters, while the bargraph display shows this as a percentage of the tank capacity.

The actual volume of the tank is calculated for the most nonlinear areas of the tank and these are entered into the meter. Setpoints are programmed to indicate when the tank is 20% and then 10% full. The bargraph display is programmed to display green above 20%, orange below 20%, and red below 10% full.



LINEARIZE YACHT FUEL TANK APPLICATION

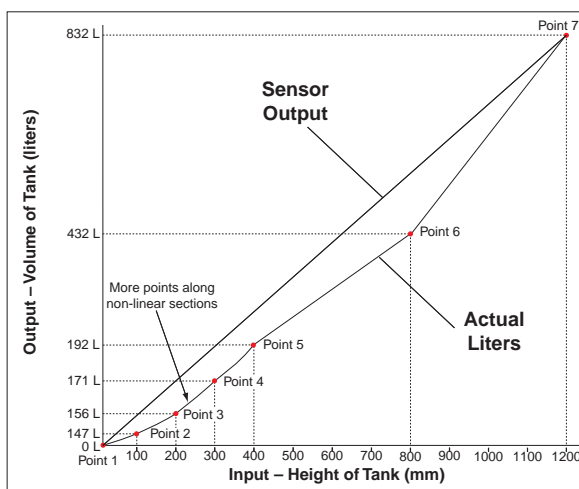


APPLICATION FUNCTIONS



Points on Curve	Height (mm)	Volume (L)
1	0	0
2	100.0	147.0
3	200.0	156.0
4	300.0	171.0
5	400.0	192.0
6	800.0	432.0
7	1200.0	832.0

Calculated Linearization Curve



LINEARIZATION

INPUTS



PROCESS
4 / 20 mA
1 / 5 V

APPLICATION VARIATIONS

- Calculate and display liters per hour used from flow sensor input.

The Texmate 320 Series bargraph controller samples at 50 times/second for this application. The press operates at 60 strokes/minute. The load cell output is rapidly changing up and down during each stroke of the press. The operator requires the display to be held at peak value for as long as practical.

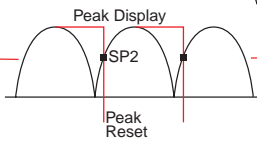
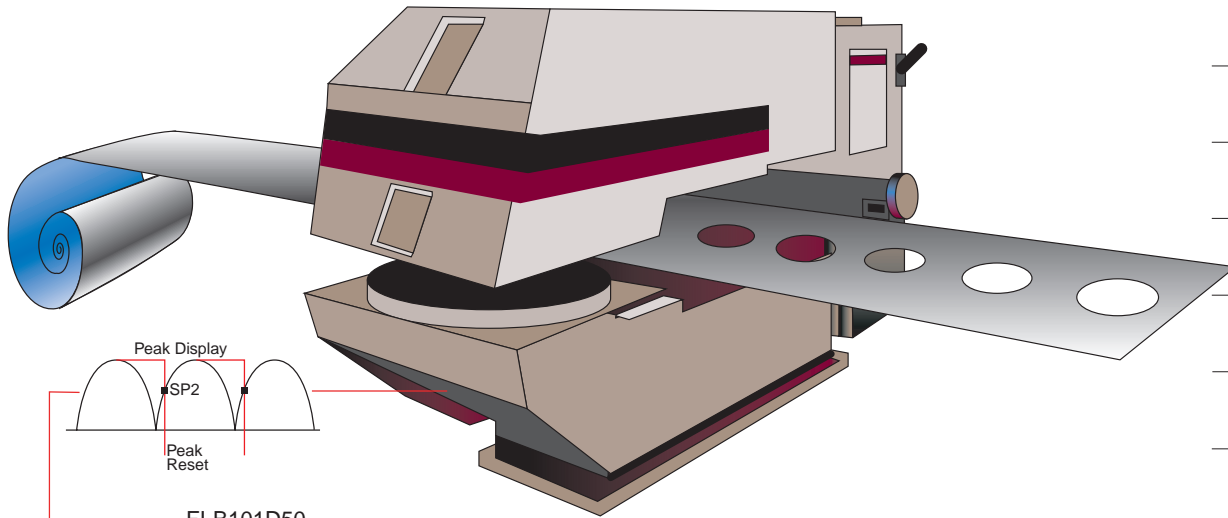
The peak display value is reset on the rising load cell signal during each press stroke. This locks the bargraph and digital display at the peak value for 0.5 seconds making the displayed values legible as required.

From the digital display the overload trip setpoint is accurately adjusted. The Texmate 320 Series fits to the press at 30% of the cost of a replacement control board for the original control system.

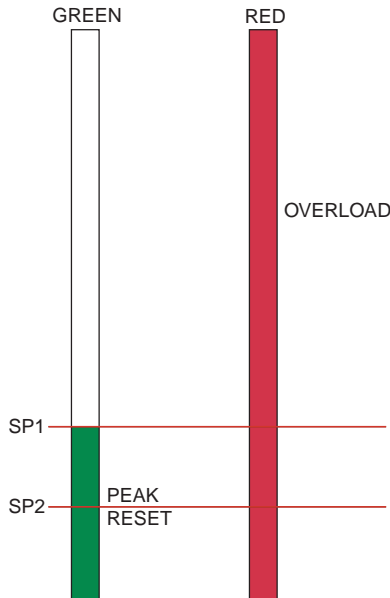
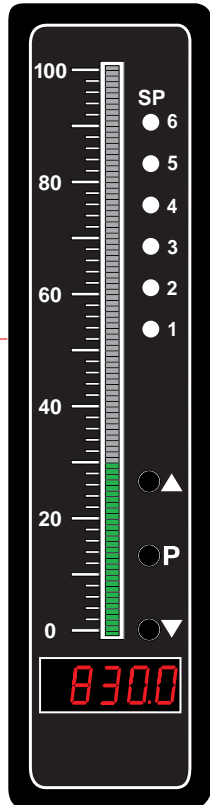
PRESS CONTROL PEAK OVERLOAD APPLICATION



APPLICATION FUNCTIONS



FI-B101D50 Operational Display



RELAY OUTPUTS

REGISTER RESETS

INPUTS

LOAD-CELL

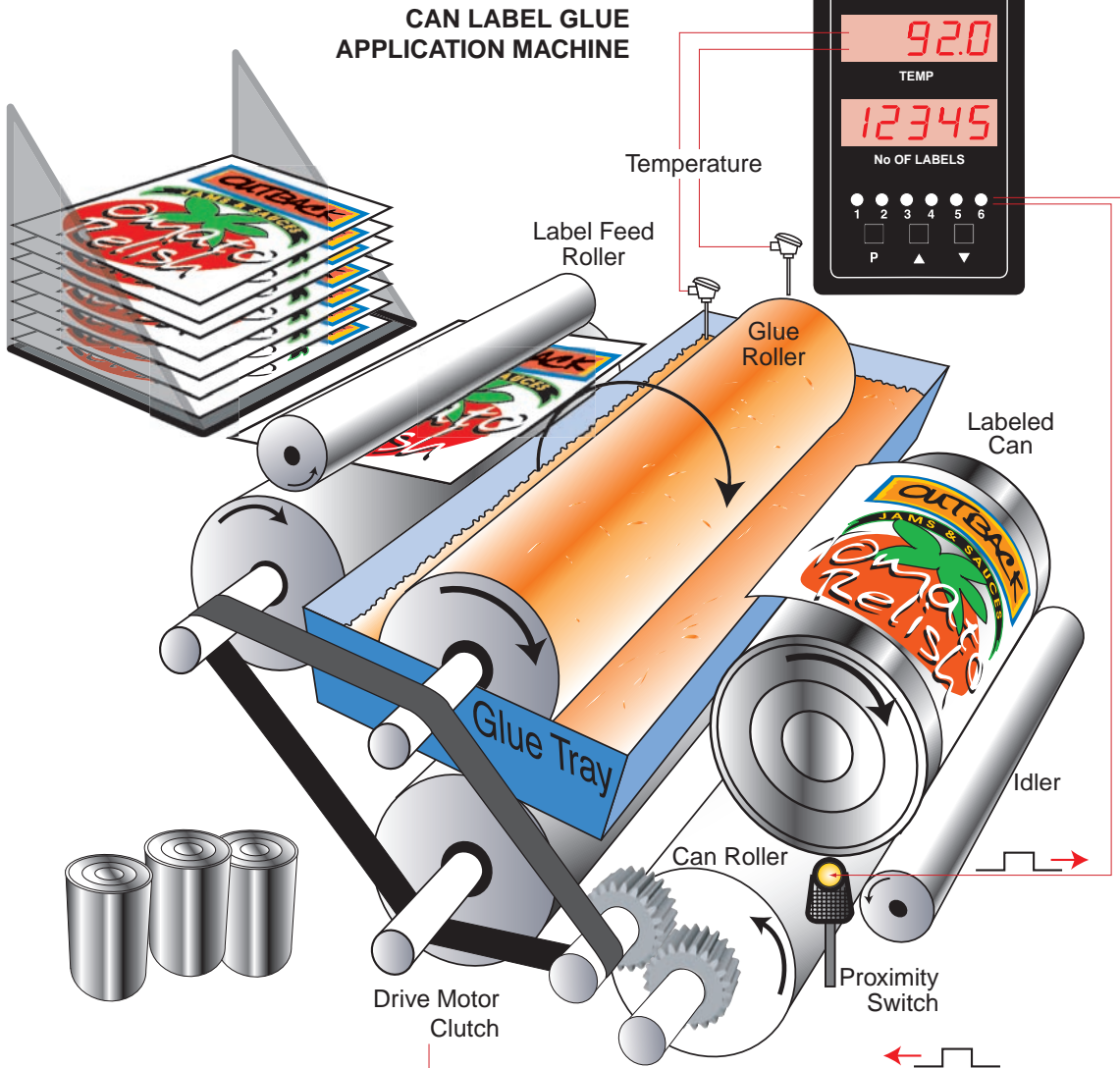
Our customer manufactures machines for applying labels to cans. They require a controller to control the temperature of the glue and glue roller. The controller also needs to control the length of time the feed mechanism operates to feed the label over the glue roller and spin the can to apply the label.

Texmate installed a Tiger 320 Series DI-503 3-display programmable meter controller (PMC). Two thermocouple inputs control the temperature of the glue and the glue roller and inhibit the machine so that it will not operate unless the glue temperature is within set limits.

A timer controls the clutch, which controls the label feed and can spin time. The timer is configured for 0.001 seconds resolution and is easily adjustable by the operator.

A can is placed onto the machine. After 300 milliseconds the clutch operates the label feed, the can spins for 1 revolution, and then the clutch disengages and stops the can with the label attached.

Clutch operating time is displayed on the primary display and glue temperature is displayed on the 2nd display. The clutch control relay operates a can counter and is displayed on the 3rd display.



APPLICATION FUNCTIONS	
APPLICATION SPECIFIC MACRO	★
RELAY OUTPUTS	⏏
TIMERS	⏱
REGISTER RESETS	↕
SEQUENCE CONTROLS	⏪
INPUTS	★
STATUS INPUTS	★
TEMPERATURE T/C, RTD	⚡

APPLICATION VARIATIONS

- For larger cans, the glue is often applied only to the forward edge and the rear edge of the label. This is done by raising and lowering the label onto the glue roller at the start and end of the can spin cycle. The setpoints to operate the label raise lower sequence automatically follow the timer settings for the spin time and can position.



26 Text Messaging and Tank Level Application.

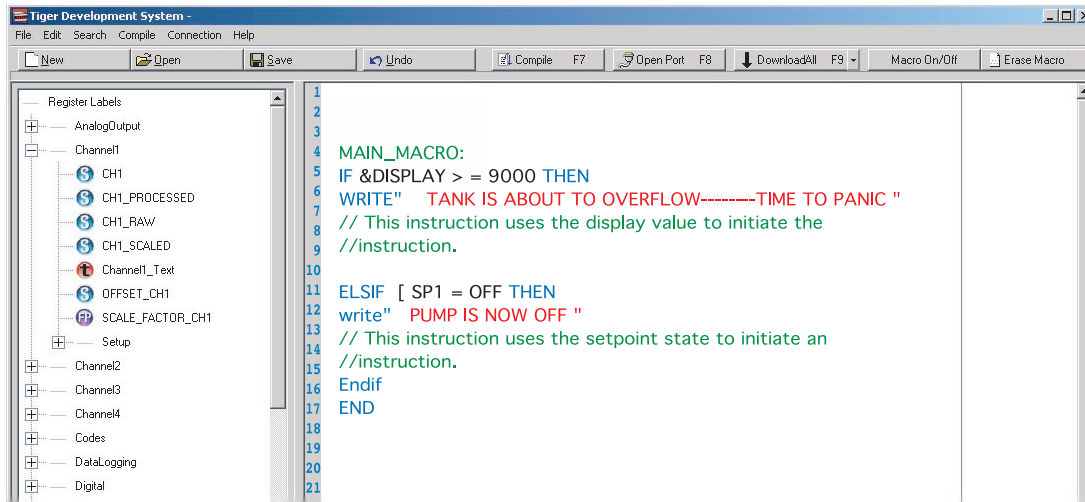
Our customer has a semi-automated mixing tank and uses a level sensor to detect the tank level. The tank is filled with a primary solution to a reconfigurable percentage of the full tank, controlled by a setpoint. A secondary solution is then added by hand.

Texmate installed a Tiger 320 Series DI-60A controller. The controller is calibrated to display the percentage in hundredths of a percent (000.00%). When the pump fills the primary solution to the selected percentage, the setpoint relay stops the pump and the controller scrolls the message 'PUMP IS NOW OFF'.

The operator then adds the secondary solution to the tank. When the level sensor senses the tank is 90.00% full the controller display scrolls the message 'TANK IS ABOUT TO OVERFLOW-----TIME TO PANIC'.

The macro shown below was written and compiled in Texmate's Tiger Development System (TDS) program to control the operation of the primary solution pump and the display messages by setpoint.

TEXT MESSAGING FOR TANK LEVEL APPLICATION




```


1
2
3
4 MAIN_MACRO:
5 IF &DISPLAY > = 9000 THEN
6 WRITE " TANK IS ABOUT TO OVERFLOW-----TIME TO PANIC "
7 // This instruction uses the display value to initiate the
8 //instruction.
9
10
11 ELSIF [ SP1 = OFF THEN
12 write " PUMP IS NOW OFF "
13 // This instruction uses the setpoint state to initiate an
14 //instruction.
15 Endif
16 END
17
18
19
20
21

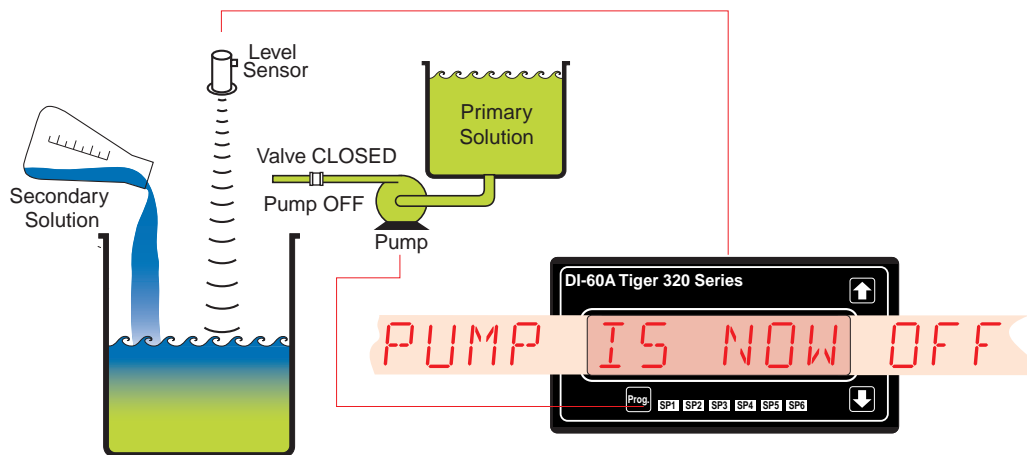
```





APPLICATION FUNCTIONS

MACRO 

RELAY OUTPUTS 



LINEARIZATION 

TEXT MESSAGING 

INPUTS

PROCESS
4 / 20 mA
1 / 5 V

APPLICATION VARIATIONS

- For irregular shaped tanks, the level sensor signal can be linearized using one of the controller's four built-in programmable linearization tables.

TEXMATE CONTROLLERS FOR THIS APPLICATION		
Order Codes	Comments	List Price in US\$
DI-60AT—DR—PSI—IP07—OR31	Macro required. Charges vary depending on application. Contact Texmate.	US\$ 435.00

Prices are for listed components only and do not include configuration charges if applicable. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

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27 Boiler Energy Calculation Macro

Our customer supplies hot water from a heat exchanger to other users and charges them for kilowatt hours (kW.h) used. The customer supplied calculation to compile the macro was:

The difference between water temperature out and water temperature returned x a factor x flow in liters per second.

- > kW - Flowrate (1/m) / 60 x dT (C) x 4.190
- > kW - Flowrate (1/m) / x dT (C) x 0.06983333

This application uses a Tiger 320 Series DI-60AT controller with an ITTE RTD/Frequency/RTD input module installed and Texmate's Boiler Energy Calculation macro, Version 1.3, running.



APPLICATION FUNCTIONS

BOILER ENERGY MACRO

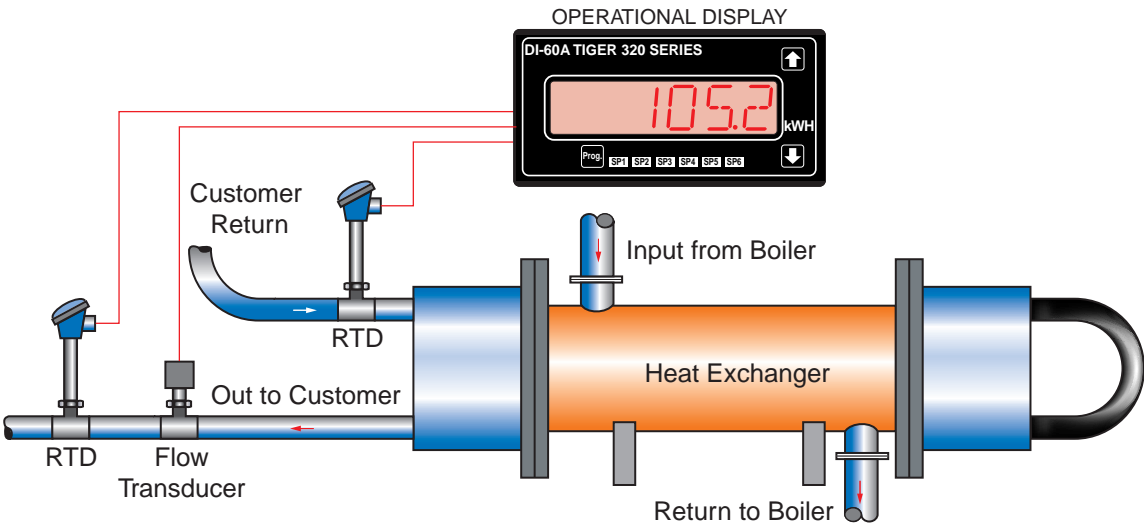
BOILER ENERGY CALCULATION MACRO

```

1
2
3
4
5 REG &OUT_TEMP = &CH1           // RTD input in deg C
6 REG &RETURNED_TEMP = &CH3      // RTD input in deg C
7
8 REG &FLOW = &CH2              // Freq input in liters per minute
9 REG &KW = &CH4                // result in kW
10
11 CONST FACTOR = 0.06983333
12
13 Customer_ID_Macro:
14 WRITE " ___Boiler Energy Calculation Macro V1.3 ___ "
15 END
16
17
18 Main_Macro:
19 &KW = &FLOW * (&OUT_TEMP - &RETURNED_TEMP) * FACTOR
20
21 END
    
```

TOTALIZERS

CALCULATIONS



INPUTS

PROCESS
4 / 20 mA
1 / 5 V

TEMPERATURE DUAL RTD

APPLICATION VARIATIONS

- View kW.
- View flow rate.
- Use a Tiger 320 Series DI-503 and view three parameters simultaneously.

TEXMATE CONTROLLERS FOR THIS APPLICATION		
Order Codes	Comments	List Price in US\$
DI-60AT—DR—PSI—PS1—ITTE—XXX	Macro required. Charges vary depending on application. Contact Texmate.	US\$ 405.00

Prices are for listed components only and do not include configuration charges if applicable. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

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Our customer operates a gas dispenser that fills gas cylinders of unknown volume and calculates the cost in dollars.

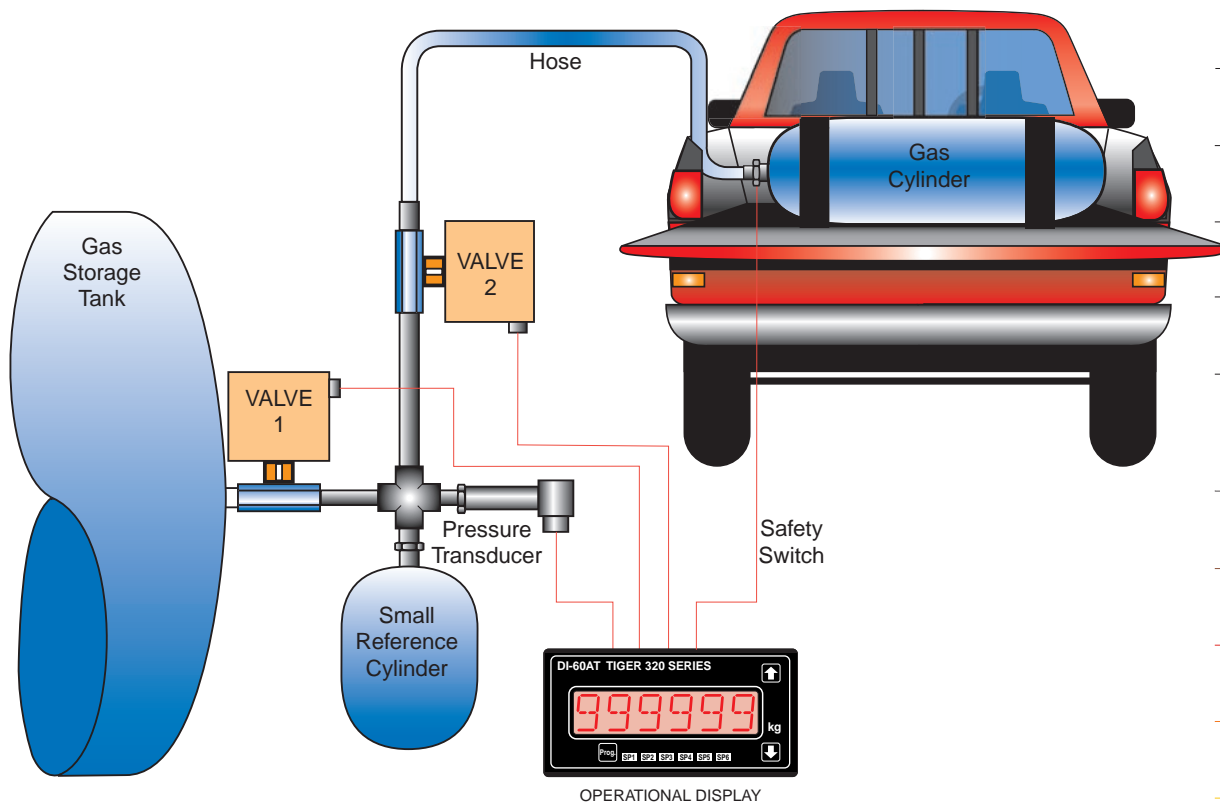
The meter automates the control process through a macro. In the diagram below, both valves 1 and 2 are CLOSED at the beginning of the process (the default position). When the hose connects to the gas cylinder, the safety switch triggers the macro. Valve 1 OPENS, pressurizing the small reference cylinder of known capacity, and the meter stores the pressure data measured from the pressure transducer.

Valve 1 then CLOSES and valve 2 OPENS. The meter measures the pressure difference. The fill capacity is then calculated in liters by the meter from a calculation provided by the customer. Valve 1 then OPENS, filling the system and the meter calculates the cost of the fill amount in dollars. Valves 1 and 2 CLOSE and the hose is disconnected.



APPLICATION FUNCTIONS	
APPLICATION SPECIFIC MACRO	★
RELAY OUTPUTS	⏏
TIMERS	⏱

GAS CYLINDER FILLING SYSTEM USING A PRESSURE TRANSDUCER



SERIAL OUTPUTS	⏏
REGISTER RESETS	↕
TOTALIZERS	+
CALCULATIONS	⚙
SEQUENCE CONTROLS	⏏

LOAD-CELL PRESSURE

APPLICATION VARIATIONS

- The procedure can be applied to gases or liquids.

Our customer carries out stress tests on beams to determine the peak load pressure and the linear displacement reading at the point of failure.

Texmate installed a Tiger 320 Series DI-50E meter configured to display and hold the peak readings, load pressure on Channel 1, and linear displacement on Channel 2.

The meter is configured to log data at a constant rate and download directly to a computer to calculate the rate of change.



APPLICATION FUNCTIONS

PEAK HOLD



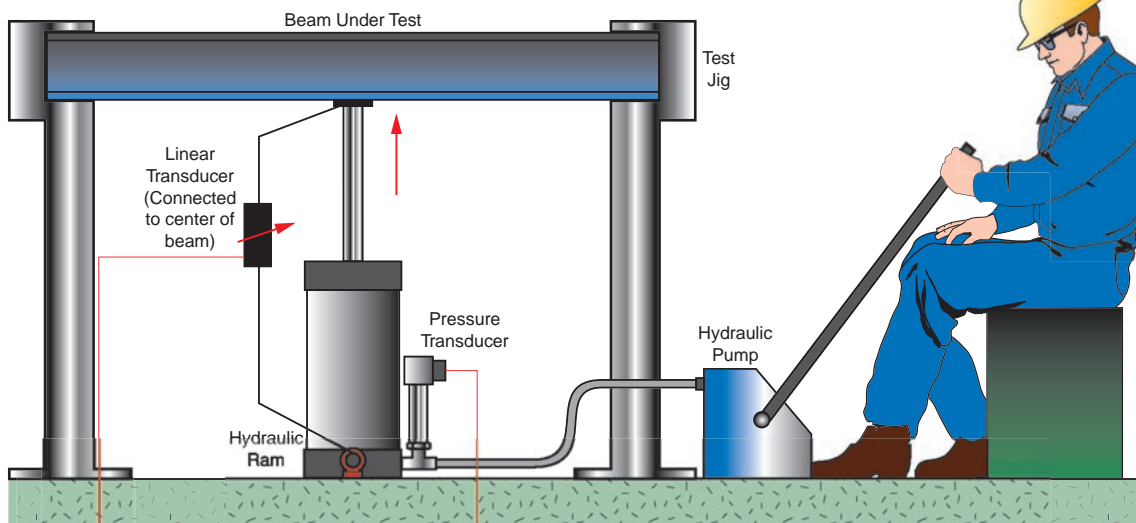
SERIAL OUTPUTS



INPUTS

PROCESS
4 / 20 mA
1 / 5V

LOAD-CELL PRESSURE



OPERATIONAL DISPLAY
Displaying load pressure

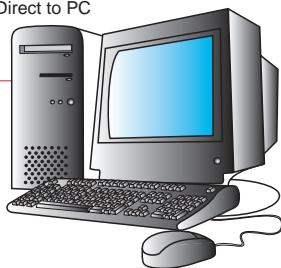


Press the UP button to display Channel 1 (peak load pressure) reading



Press the DOWN button to display Channel 2 (linear displacement) reading

Serial Output
Direct to PC



APPLICATION VARIATIONS

- Date, time, load peak pressure, and linear displacement downloaded directly to a printer, at a timed rate or from the front panel.
- 16-bit analog output to a chart recorder (0-10 VDC or 0-20 mA).
- Relay setpoints can be programmed for PASS/FAIL applications, preventing beam destruction.

Our customer operates a trucking company and requires a printed record of the weight of the load being carried on each truck. Texmate installed a Tiger 320 Series DI-50E controller with a permanently connected serial printer and two remote tare pushbuttons.

The controller is connected to the weighbridge, calibrated to read in the appropriate engineering units, and programmed for the remote tare functions with all non-application codes blanked out.

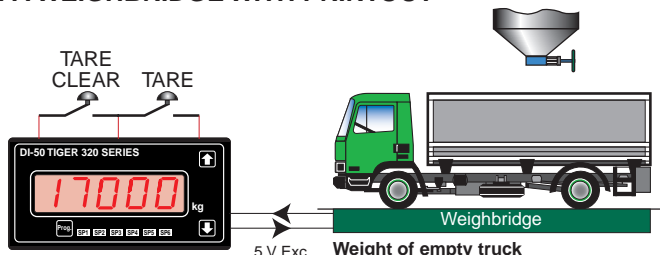
The output from the weighbridge load cells is fed to the controller's input signal conditioner. The controller is programmed to tare the weight of the empty truck on the weighbridge before weighing the truck and its payload. The truck and its payload are then weighed providing a payload weight only.



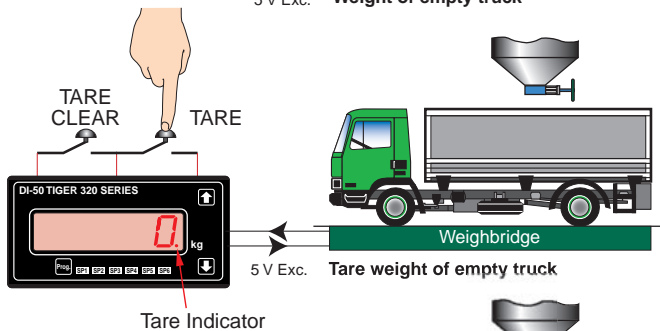
APPLICATION FUNCTIONS

AUTOTARE TO OBTAIN PAYLOAD FROM A WEIGHBRIDGE WITH PRINTOUT

- Place the empty truck on the weighbridge. The meter displays the weight of the empty truck.



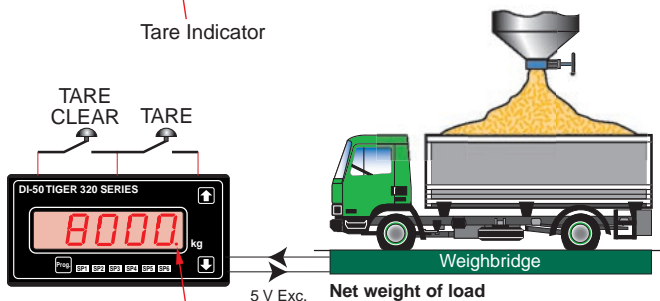
- Press the TARE remote pushbutton to tare the weight of the empty truck. The meter displays 0 and the tare indicator lights up.



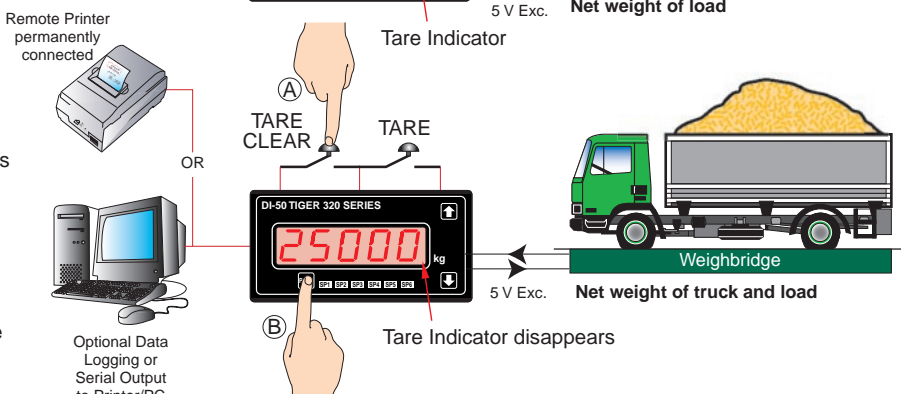
APPLICATION VARIATIONS

- The meter can be set to read in either tons or pounds, metric tonnes or kilograms, or load dollar value.
- A Texmate alphanumeric DI-60AT meter can be used to customize the display text to suit the application.
- Setpoints can be used to control the truck filling process. Up to six relays are available for batching operations.

- Place the load into the empty truck. The meter displays the weight of the load only.



- Press the TARE CLEAR remote pushbutton. The meter displays the gross weight of the truck and load. Press the PROGRAM button. The programmed critical weights are printed at the end of the weighing process with a time and date stamp.



TEXMATE CONTROLLERS FOR THIS APPLICATION

Order Codes	Comments	List Price in US\$
DI-50E—DR—PSI—ISS1		US\$ 255.00

Prices are for listed components only and do not include configuration charges if applicable. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

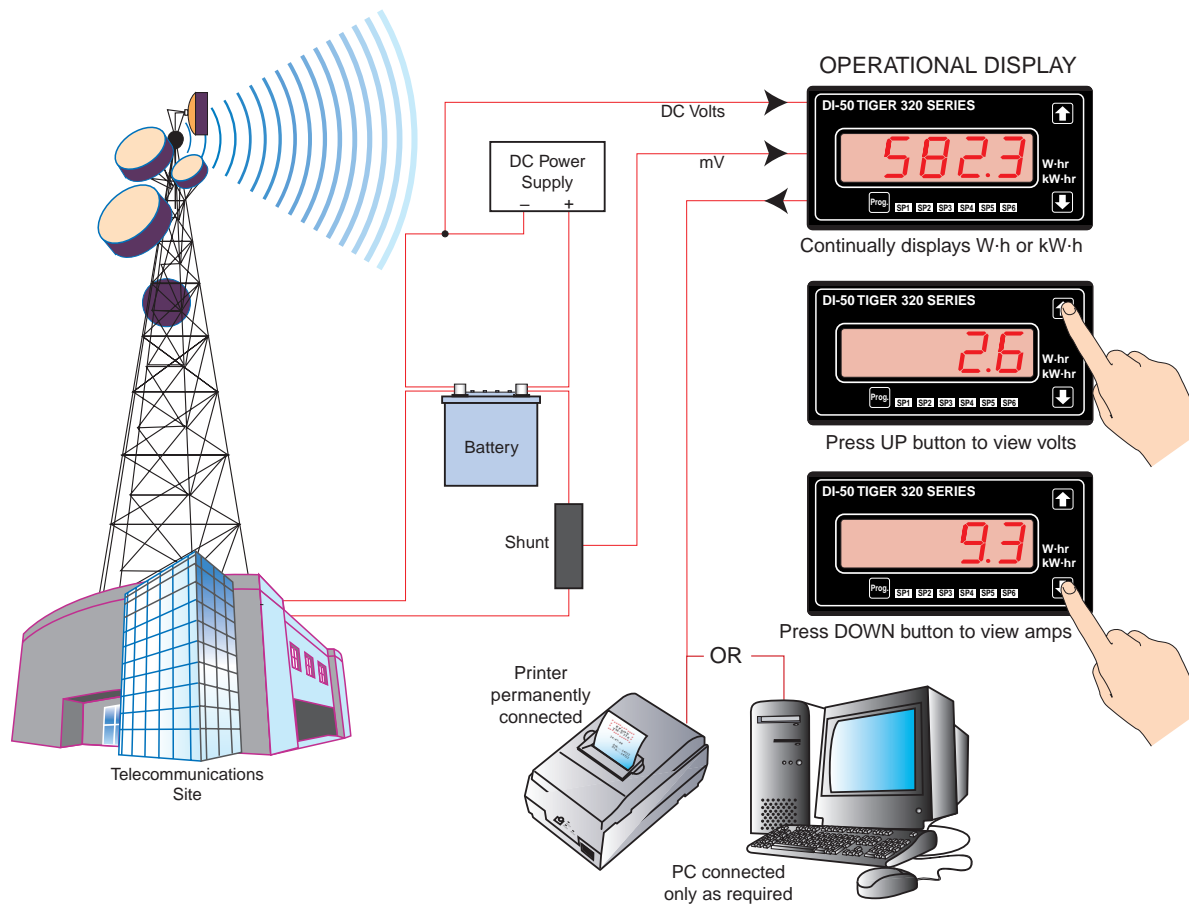
Texmate cannot assume responsibility for any application process described. No process patent licenses are implied. Texmate reserves the right to change processes, equipment, specifications, and prices without notice at any time.

LOAD-CELL PRESSURE

Our client has multiple customers on a DC power supply system and needs to know the watt hours (W-hr) or kilowatt hours (kW-hr) used by each customer. Texmate installed a Tiger 320 Series DI-50E meter to measure the DC volts from the power supply on Channel 1 and the DC amps from a DC shunt on Channel 2. The meter records the result of Channel 1 x Channel 2 as W-hr or kW-hr and continually displays this on the operational display.

The volt reading can be viewed by pressing the UP button and the amp reading viewed by pressing the DOWN button. The date, time, volts, amps, and W-hr or kW-hr can be downloaded to a computer or a permanently connected printer either directly, at a set capture rate, or by pressing a front-panel button. The meter has up to six relays available for alarm or control functions. The relay setpoint modes can be individually programmed to activate from any channel or result.

DC WATT HOURS OR KILOWATT HOURS MEASUREMENT & CONTROL



APPLICATION FUNCTIONS	
DC WATTS	★
RELAY OUTPUTS	⏏

TOTALIZERS	+
CALCULATIONS	+/−

INPUTS

VOLTS DC	Red bar
AMPS DC	Orange bar
WATTS DC	Yellow bar

APPLICATION VARIATIONS

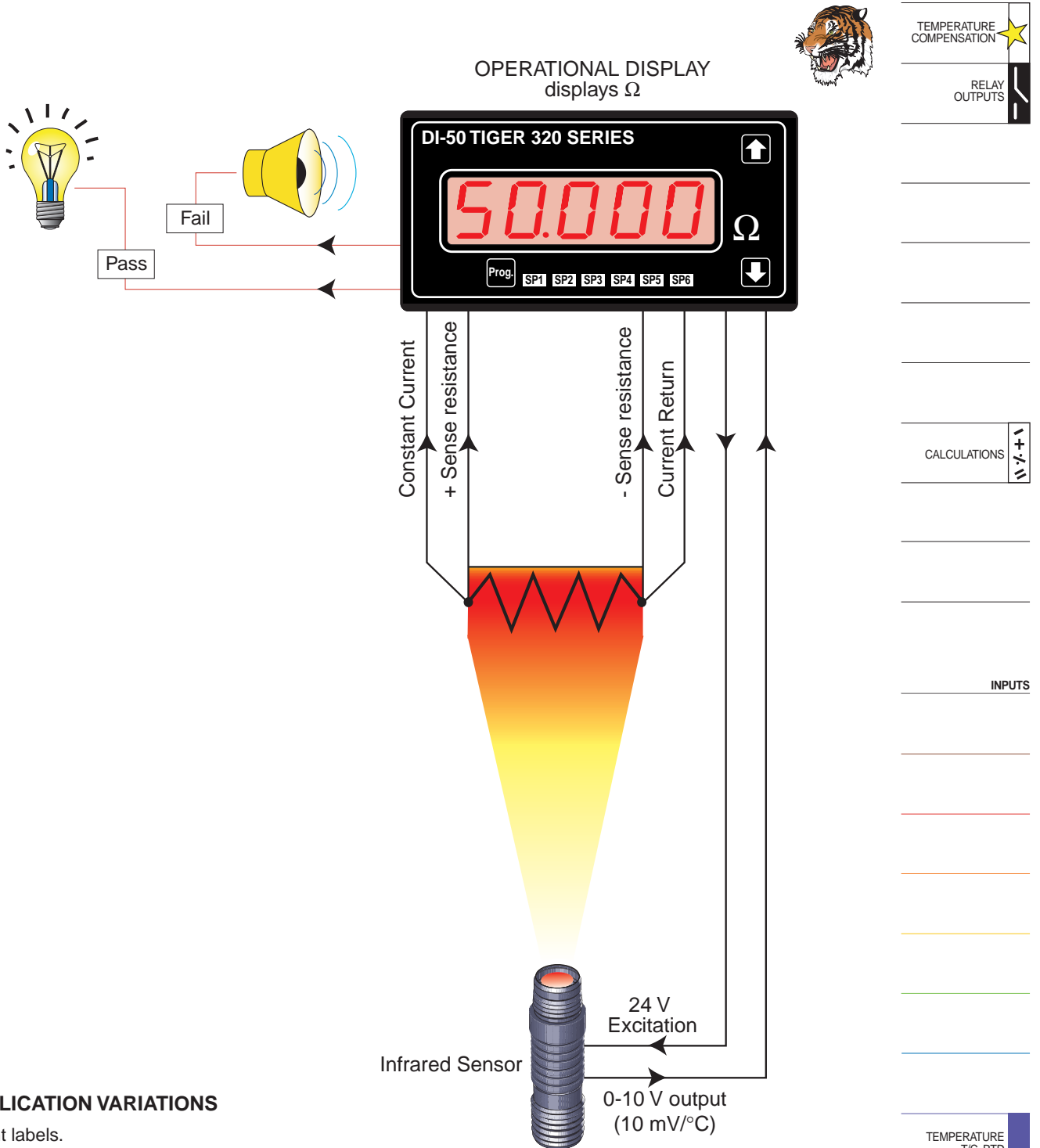
- A Tiger 320 Series alphanumeric DI-60AT meter can be used to customize the display text to suit the application.
- Setpoints are available for volts or amps control and alarm functions.
- 16-bit analog output is available for connection to a chart recorder or systems.

For quality control, our customer requires to measure the resistance of hot copper coil windings. Texmate installed a Tiger 320 Series DI-50E meter. A constant current is passed through the coil and the resistance calculated. To compensate for temperature variation the infrared sensor monitors the coil temperature.

A setpoint indicates 'PASS' or 'FAIL' of the coil under test. The meter's decimal point is set for a display resolution in milliohms (0.001 Ω).

The meter can be configured with temperature compensation for almost any conducting material.

PRECISION LOW RESISTANCE MEASUREMENT WITH TEMPERATURE COMPENSATION



APPLICATION VARIATIONS

- Print labels.
- Auto sample, log and print for quality control records.
- 0.0001 Ω resolution.

Our customer has a tank supported on a load cell and requires to dispense measured amounts of product from the tank. Texmate installed a Tiger 320 Series DI-50E meter calibrated to indicate the product weight in the appropriate engineering units. The meter is installed with two remote push-button switches configured as TARE and TARE CLEAR. All non-application codes are blanked out. Relay 1 is connected to the tank outlet valve. The amount of product required is programmed into the meter at setpoint 1. Setpoint 1 is programmed with initial startup inhibit and relay latch OFF.

(See *Setpoints & Relays Supplement (NZ201)* for full details.)

When the TARE button is pressed:

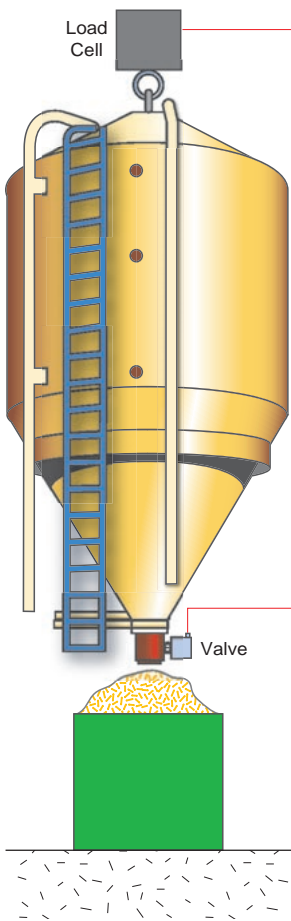
1. The display tares to 0.0
2. Relay latch off is removed and the relay energizes.
3. The valve opens until the setpoint value is reached and then closes as relay latch off operates again.
4. Pressing the TARE CLEAR button returns the meter to the operational display, indicating the weight of product remaining in the tank.

Note: The product weight reduces during dispensing, therefore the setpoint value is negative for the product taken.



APPLICATION FUNCTIONS

DISPENSE TANK PRODUCT BY WEIGHT USING A LOAD CELL



1 OPERATIONAL DISPLAY

Meter displays product weight in tank.

2 ENTER SETPOINT PROGRAMMING MODE

Press the PROGRAM and DOWN buttons. The meter enters the setpoint programming mode.

3 SETPOINT PROGRAMMING MODE

Set weight of product to be dispensed.

4 OPERATIONAL DISPLAY

Example

Press the PROGRAM button. The meter returns to enter the operational display.

5 ENTER TARE MODE

Press the TARE button. The meter enters the TARE mode and triggers Relay 1.

6 IN TARE MODE

When the meter displays the amount set in Setpoint 1, the Relay closes the motorized valve.

7 IN TARE MODE

Press the TARE CLEAR button. The meter displays the new product weight in the tank.

8 OPERATIONAL DISPLAY

Tare Indicator disappears

RELAY OUTPUTS

REGISTER RESETS

INPUTS

LOAD-CELL PRESSURE

APPLICATION VARIATIONS

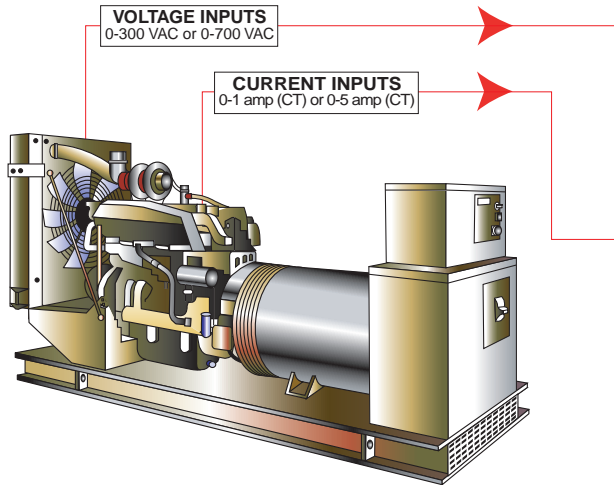
- The meter can be programmed to read in kilograms or pounds, liters or gallons.
- A Texmate 320 Series DI-60AT alphanumeric meter can be used to customize the display text to suit the application.
- A program sequence macro can be installed and run on any Tiger 320 Series 'T' type meter for batching applications.
- Up to six relays are available for batch control operations.
- A front panel button can be programmed to display the weight of the tank and product in pounds or kilograms.
- With the serial output module installed, the meter can be setup to print the dispensed product amount.

It is no longer necessary to use combinations of transducers to achieve a power measurement and control system. A Texmate Tiger 320 Series DI-503 meter, installed with a single-phase power input module, calculates and displays volts, amps, Hz, watts, watt hours, and power factor from a single-phase 2 or 3-wire voltage and current input.

The optional relay, analog and serial outputs can be configured from all the above parameters to interface with a control or alarm system.



SINGLE PHASE MEASUREMENT AND CONTROL



OPTIONS

- Up to 6 super smart relay outputs, digitally programmable upper and lower limits.
- Programmable deviation mode, hysteresis mode, latch ON or latch OFF.
- Built-in super smart timers on each setpoint.
- Programmable DOM to eliminate nuisance tripping.
- Power ON inhibit to avoid tripping during power up.
- Dual 4-20 mA or 0-10 V, 16-bit analog output.
- RS-232 or RS-485.
- DeviceNet / ModBus.
- Direct serial printer output.
- Data logging with real-time clock.

DISPLAY AND CALCULATE

- Voltage (R.M.S.).
- Current (R.M.S.).
- Frequency.
- Watts, kilowatts.
- Watt hours, kilowatt hours.
- Power factor monitoring for precise load sensing.*

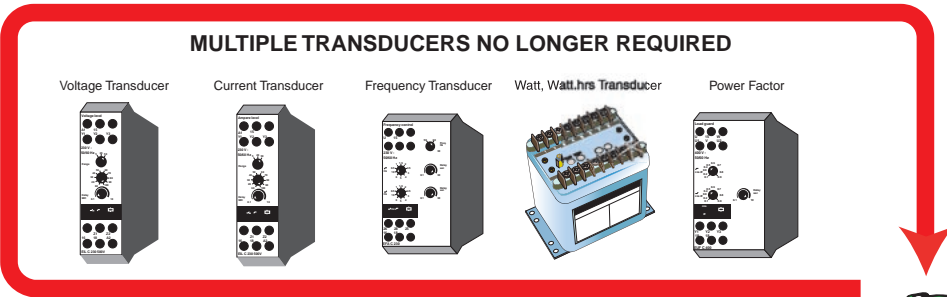
APPLICATION FUNCTIONS

RELAY OUTPUTS	
TIMERS	
ANALOG OUTPUTS	
SERIAL OUTPUTS	
TOTALIZERS	
CALCULATIONS	
SEQUENCE CONTROLS	

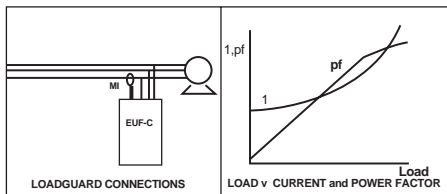
TEXT MESSAGING	
----------------	--

INPUTS	
SINGLE PHASE SMART POWER MODULE	

MULTIPLE TRANSDUCERS NO LONGER REQUIRED



* APPLICATION CONCEPT



Power factor gives an accurate measure of load change, particularly at low to medium loads, where current is dominated by its magnetizing element. Where prompt action is required the optional relays in the Tiger 320 Series meter can be used for protection against broken belts, pump cavitation, conveyor stalling and general overloads.



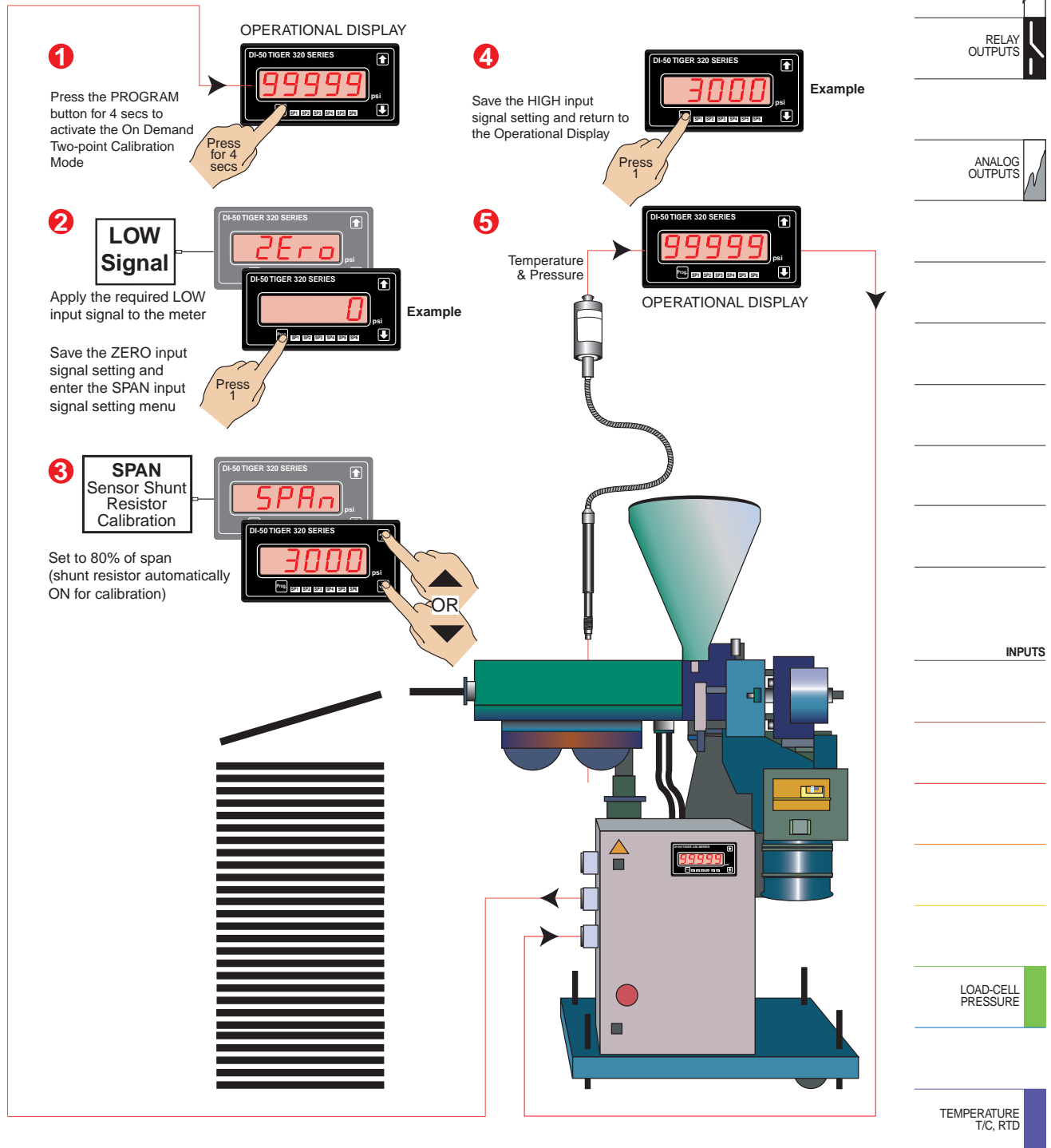
The melt pressure of a plastic extruding or moulding process is an important parameter to measure and control. However, to obtain a reliable reading of the melt pressure requires the pressure transducer to be calibrated at the melt temperature of the plastic. For moulding machines that are used with more than one type of plastic, calibration must be performed for each type.

The Tiger 320 Series programmable meter controller facilitates frequent calibration by using ON-DEMAND 2-point calibration.

By simply pressing the program button for 4 seconds, the calibration ratings are entered. Not only that, but the Tiger automatically makes use of the shunt resistor that is built into the melt pressure sensors. This means 80% of full scale pressure can be simulated at 0 pressure input by connecting the shunt resistor.



MELT PRESSURE SENSORS WITH SHUNT CALIBRATION OPTION

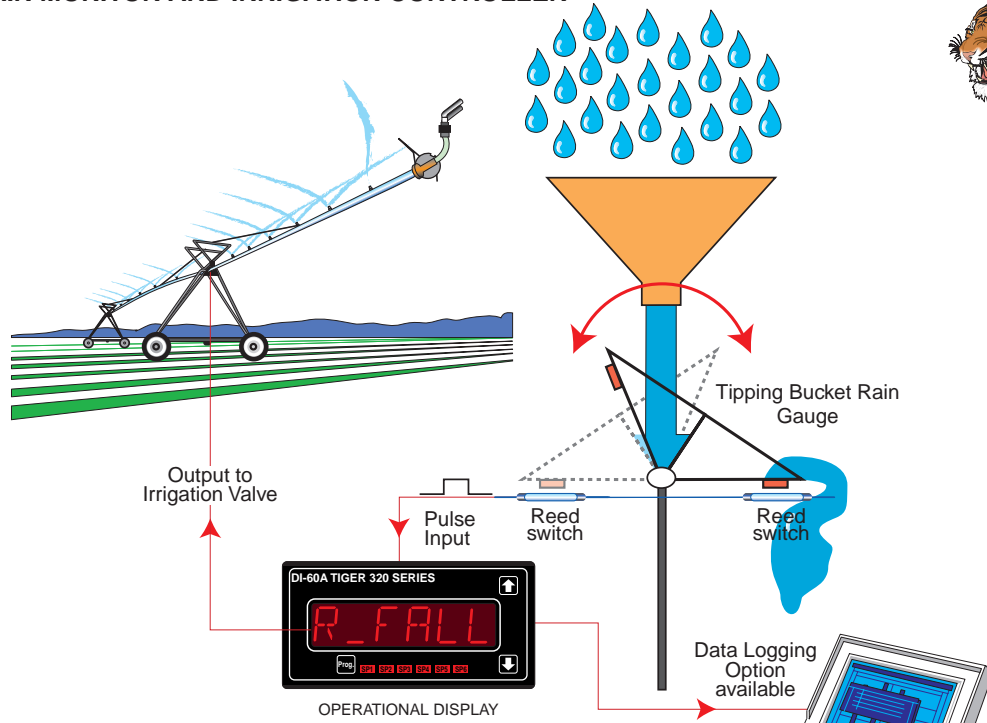


Outdoor growers in intermittent or low rainfall areas require irrigation controllers. The controller input is usually from a tipping bucket rain gauge or a flow sensor.

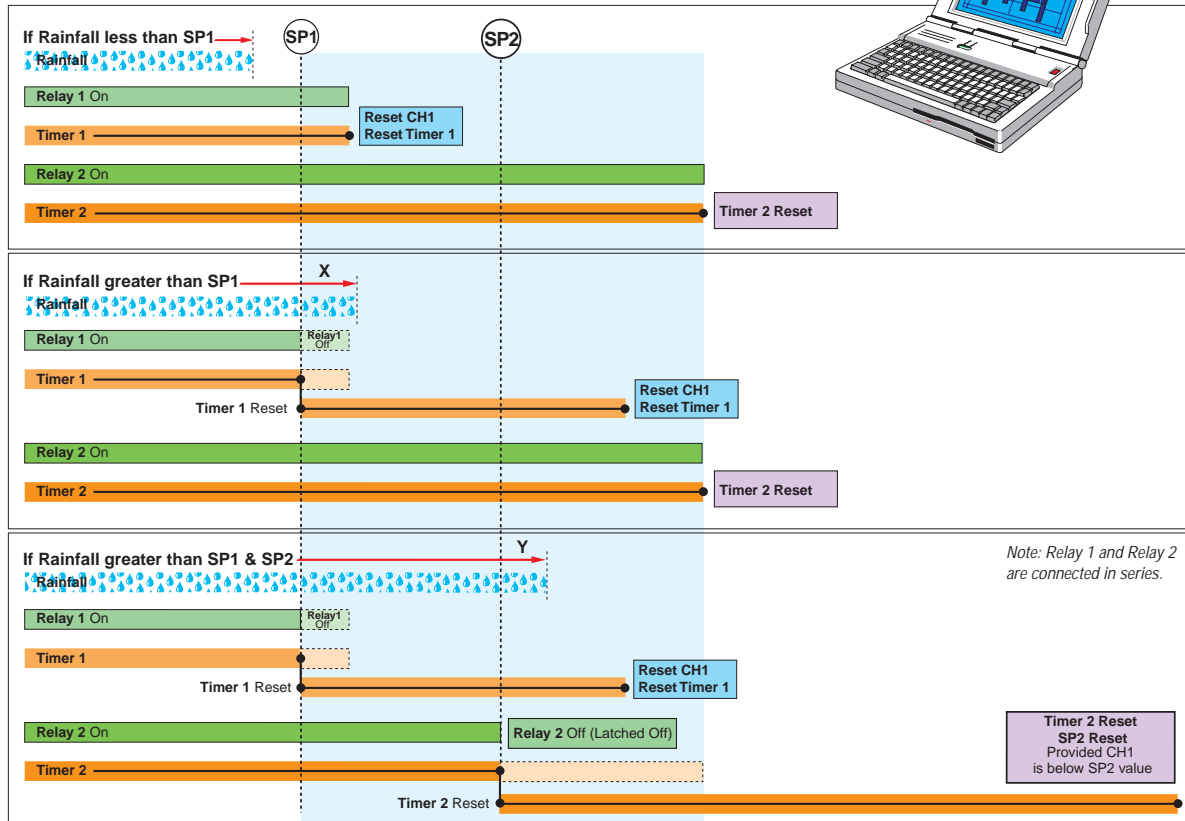
Control requirements: If more than X amount of rain falls within a programmed time, the irrigation cycle is interrupted. If Y amount more rain falls within the programmed Off-time, the irrigation cycle is interrupted for a longer time.

The DI-60A controller with alphanumeric display uses the Tiger 320 Series register reset functions to reset timers and relays during setpoint activation and deactivation. Text messaging allows ease of control and setpoint identification while all the control parameters are easily programmable by the operator. Timer reset functions are automatic with optional manual override. A macro can be installed in the controller to further enhance the control functions.

SMART RAIN MONITOR AND IRRIGATION CONTROLLER



APPLICATION FUNCTIONS	
SETPOINT CONTROL & REGISTER RESET	★
RELAY OUTPUTS	⏏
TIMERS	⏱
SERIAL OUTPUTS	⏏
REGISTER RESETS	↕
TOTALIZERS	+
CALCULATIONS	⏏
SEQUENCE CONTROLS	⏏



TEXT MESSAGING	⏏
INPUTS	★
FREQUENCY Pulse, Counter	⏏

Avoid costly motor and speed controllers for filling applications by using precise digital setpoint tracking.

The combination of a DI-60A programmable meter controller fitted with a smart load cell input module does just this, delivering accurate and reliable digital process control.

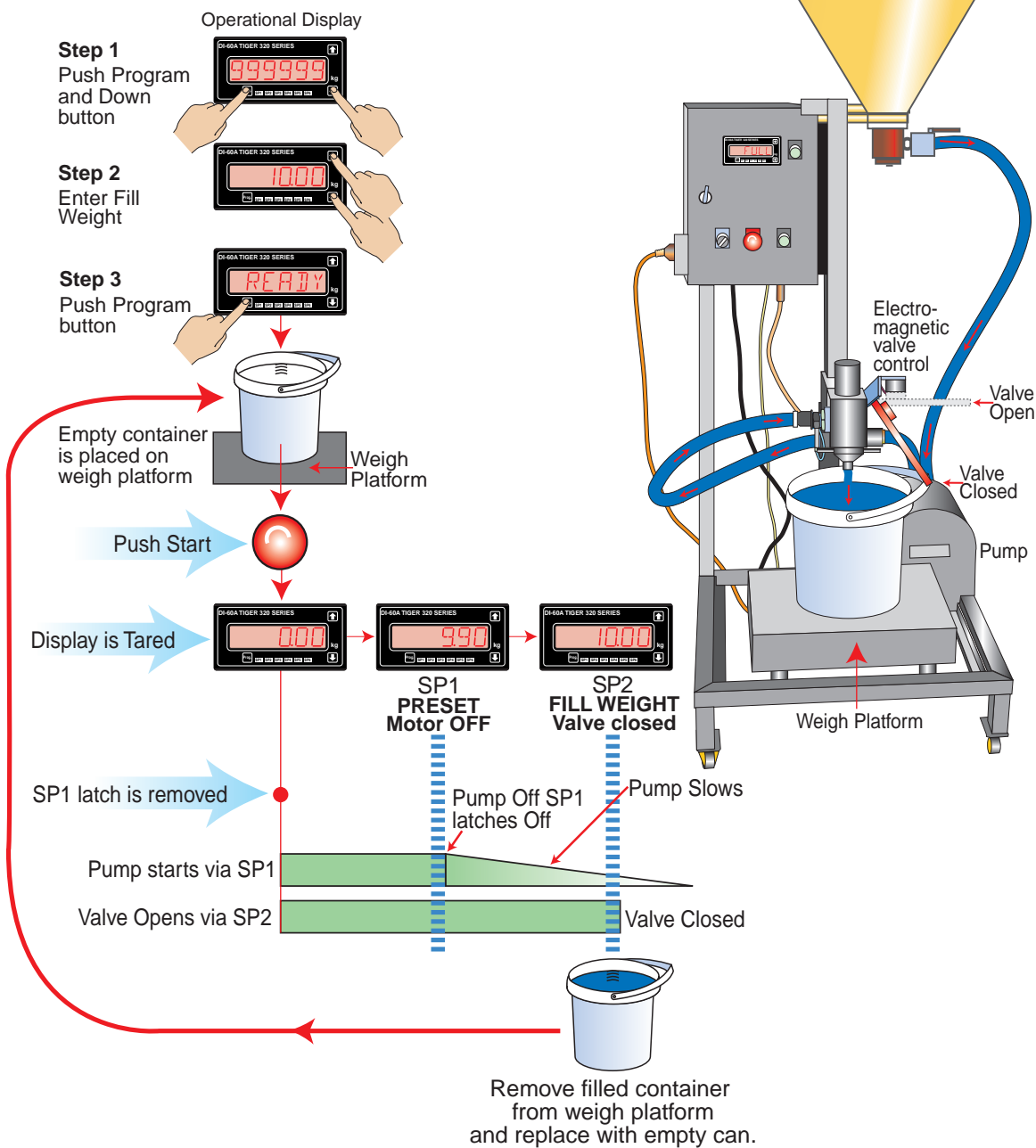
The container is placed under the tank outlet. The start button is pressed, the display is reset to zero (Tared), the valve opens and the motor starts running until setpoint 1 is reached. The motor switches off and before the motor and pump stop completely (due to the motor inertia), the fill weight is reached and setpoint 2 is then deactivated at the fill weight and the valve closes.

The filled container is removed. A new container is placed under the outlet. The start button is pressed and the fill process is repeated.

Options: Text messaging for intuitive identification of setpoint and operator instructions. Second input for container positioning sensor for automation applications. Totalize total liters dispensed. Switch off at preprogrammed total. Print out to serial printer: Date / Time and liters dispensed for customer receipt applications.



LOAD CELL FILLING APPLICATION



APPLICATION FUNCTIONS	
SETPOINT ID	★
RELAY OUTPUTS	⏏

REGISTER RESETS	↕
-----------------	---

CALCULATIONS	+ - × ÷
SEQUENCE CONTROLS	⏏

TEXT MESSAGING	⏏
----------------	---

INPUTS	
	★

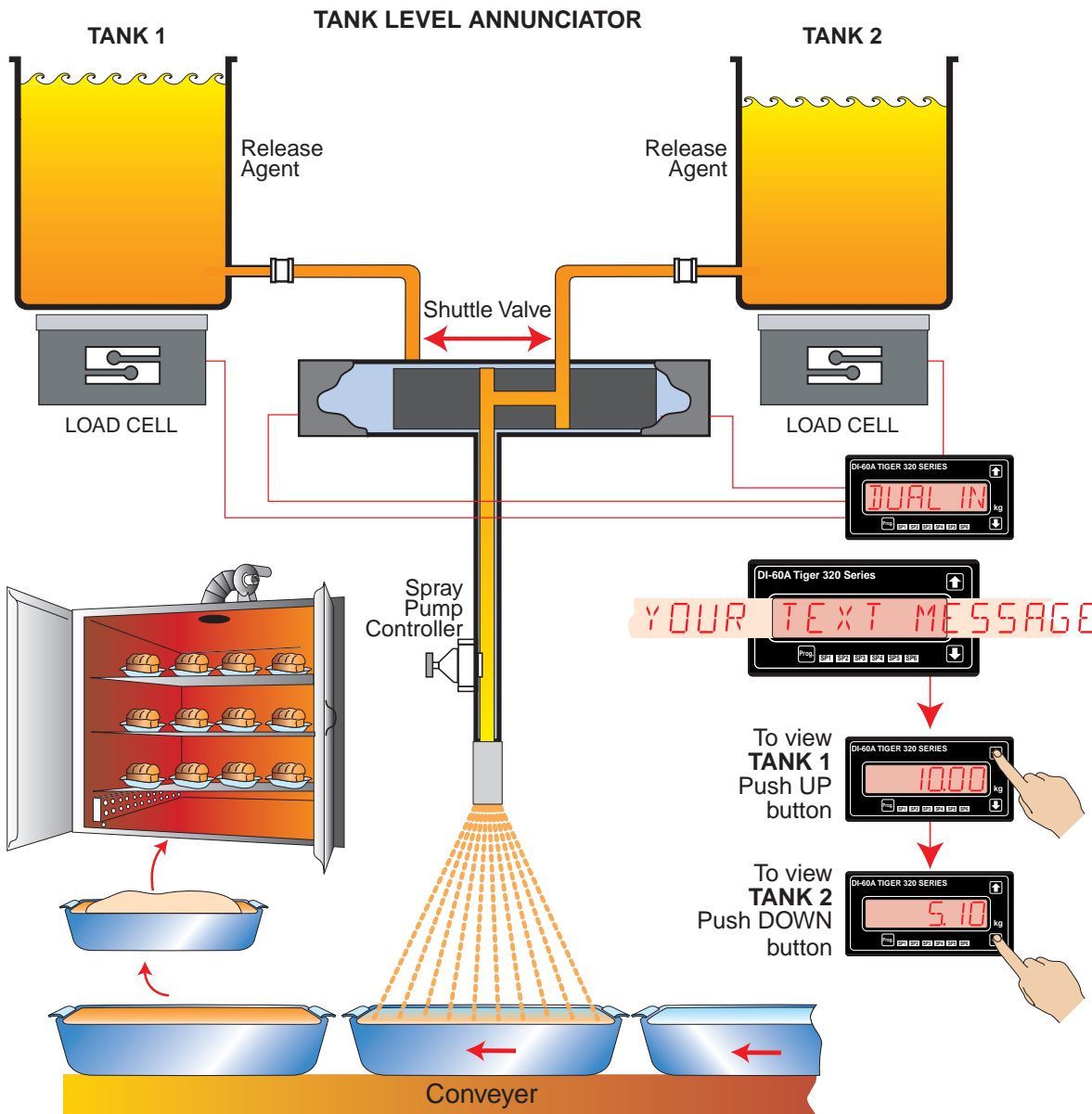
LOAD-CELL PRESSURE	■
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A bakery customer has two tanks containing a release agent that is sprayed into the baking trays. If the release agent runs out, the bread sticks to the trays. Two release agent drums, TANK 1 and TANK 2 are placed onto two independent load-cell platforms and both load cell outputs are connected to a dual load-cell input module installed in a DI-60AT controller.

1. On start up, TANK 1 valve is open.
2. When TANK 1 low level (set-point 1) operates, TANK 1 valve closes and TANK 2 valve opens.
3. The system is now operating from TANK 2.
4. TANK 1 is replaced, TANK 1 low level alarm is now OFF.
5. When TANK 2 low level alarm operates, TANK 2 valve is closed and TANK 1 valve is opened.
6. The sequence is repeated.

The controller is programmed to scroll a text message across the display to indicate the tank in use, and when the tank low alarms are energized. For example:

1. If both tanks above their low setpoint then display = ["tAnk 1"]
2. If TANK 1 is below low setpoint controller will automatically open TANK 2 valve and close TANK 1 valve, the scrolling display then = ["tANK 2 in use tANK 1 low"]
3. If TANK 1 is replaced therefore no low alarms display then = ["tANK2"]
4. If TANK 2 is low, the controller will automatically open TANK 1 valve and close TANK 2 valve the display will then scroll ["tANK 1 in use tANK 2 low"]
5. If TANK 2 is replaced therefore no alarms display = ["tANK1"]
6. If both tanks are low the display will scroll ["tANK1 Lo tANK2 Lo"]



APPLICATION FUNCTIONS	
SCROLLING TEXT MESSAGING	★
RELAY OUTPUTS	⏏

REGISTER RESETS	↕
TOTALIZERS	+ +
CALCULATIONS	÷ + - ×
SEQUENCE CONTROLS	⏏

TEXT MESSAGING	⏏
----------------	---

INPUTS	
STATUS INPUTS	★

LOAD-CELL PRESSURE	🟢
--------------------	---

TANK LEVEL MACRO

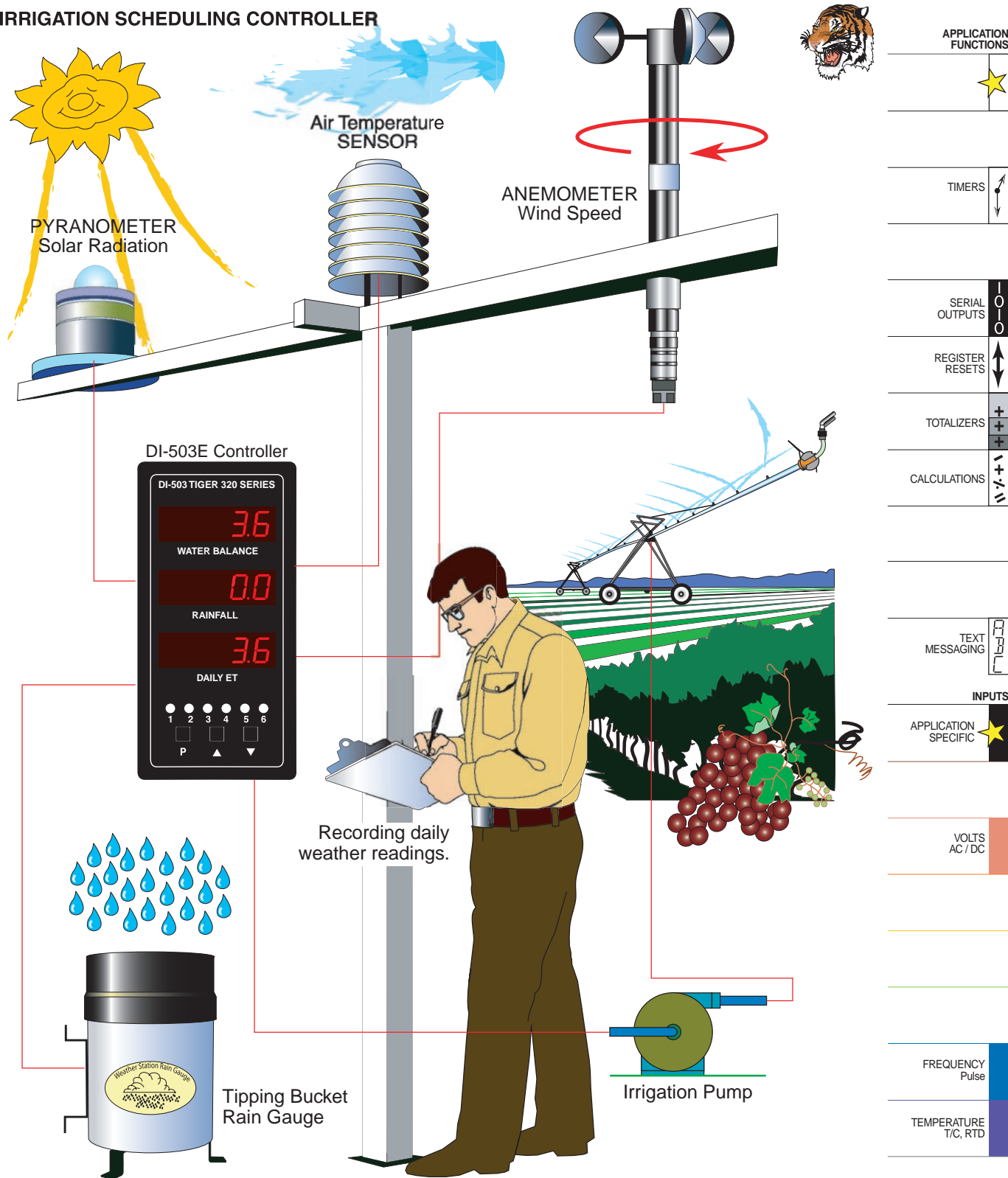
The example macro has been written to

1. Automate the valve position and therefore the tank in use.
2. Scroll across the display appropriate text message indicating the condition of the tanks and valves.

Our customer requires water balance studies of water resource allocation for crop management to maximize crop yield and reduce irrigation costs. A weather station with a Tiger 320 Series controller is set up in a vineyard to measure solar radiation, wind speed, rainfall, and air temperature. A macro installed in the meter and generated by the Texmate Development Software program calculates daily evapotranspiration.

The controller monitors and datalogs the environmental conditions, makes management decisions based on calculated daily evapotranspiration figures produced by the controller, and optimizes the costly application of water to the plants.

IRRIGATION SCHEDULING CONTROLLER



Our customer requires an energy efficient method of gently heating and cooling viscous solutions to assist the mixing process in the food and cosmetic industries.

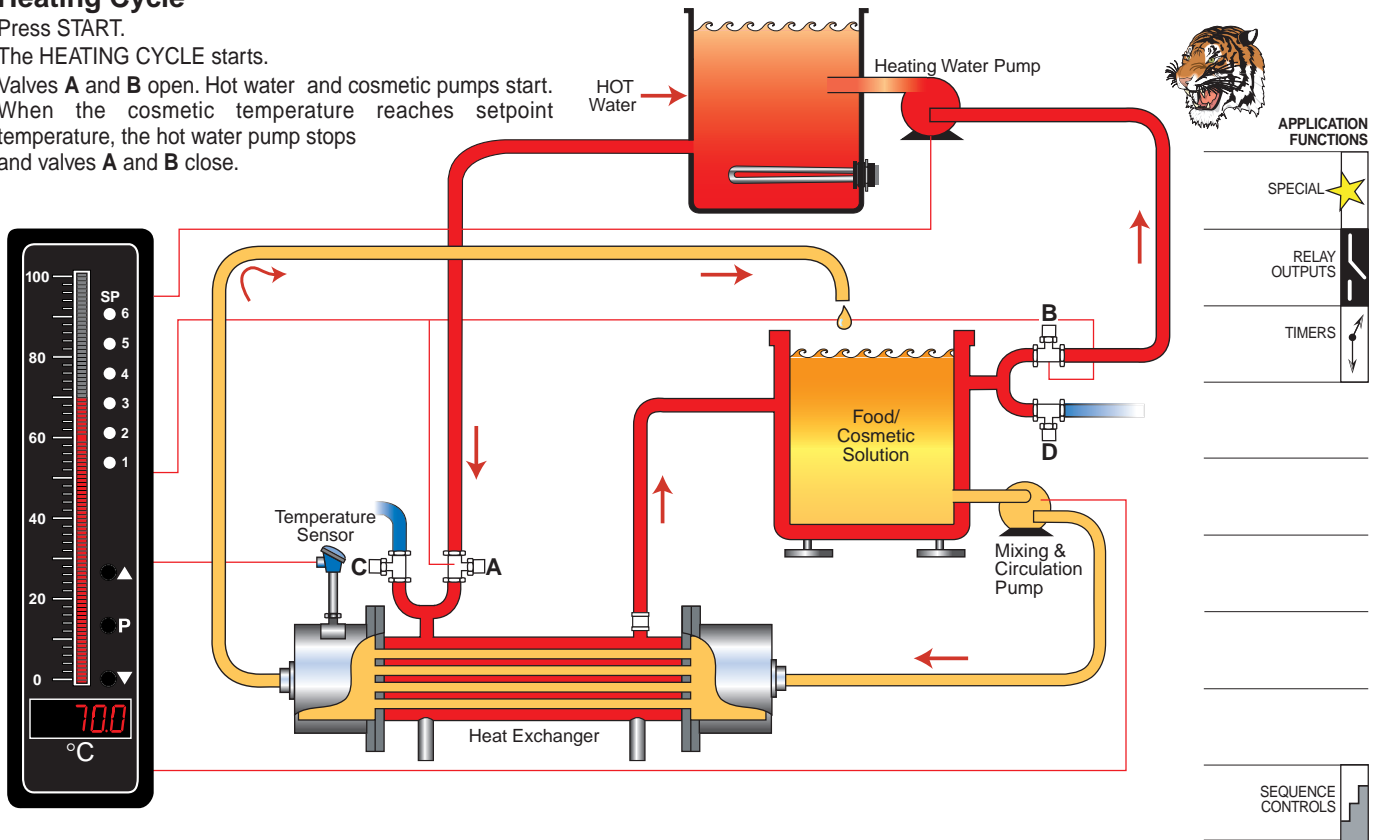
Texmate installed a Tiger 320 Series tri-color bargraph controller to automate the process and identify the heating and cooling cycles.

Heating Cycle

Press START.

The HEATING CYCLE starts.

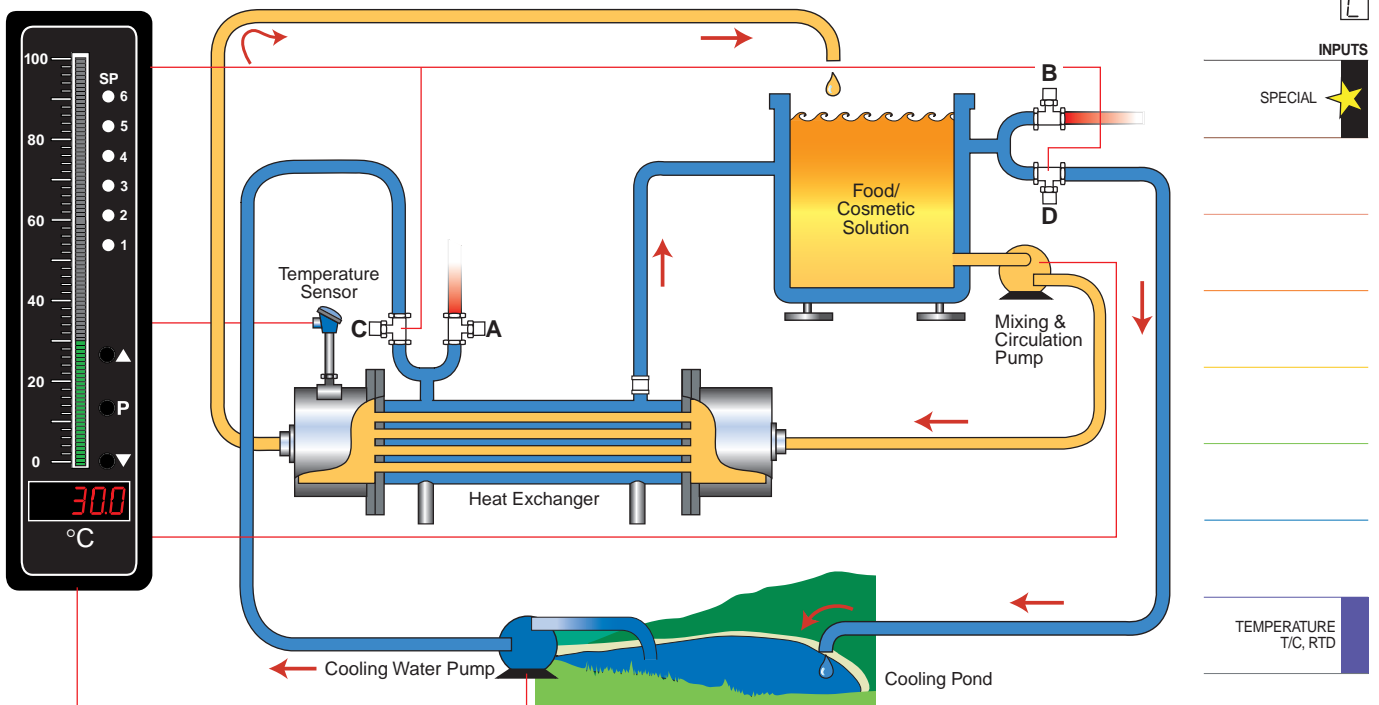
Valves **A** and **B** open. Hot water and cosmetic pumps start. When the cosmetic temperature reaches setpoint temperature, the hot water pump stops and valves **A** and **B** close.



Cooling Cycle

The COOLING CYCLE starts.

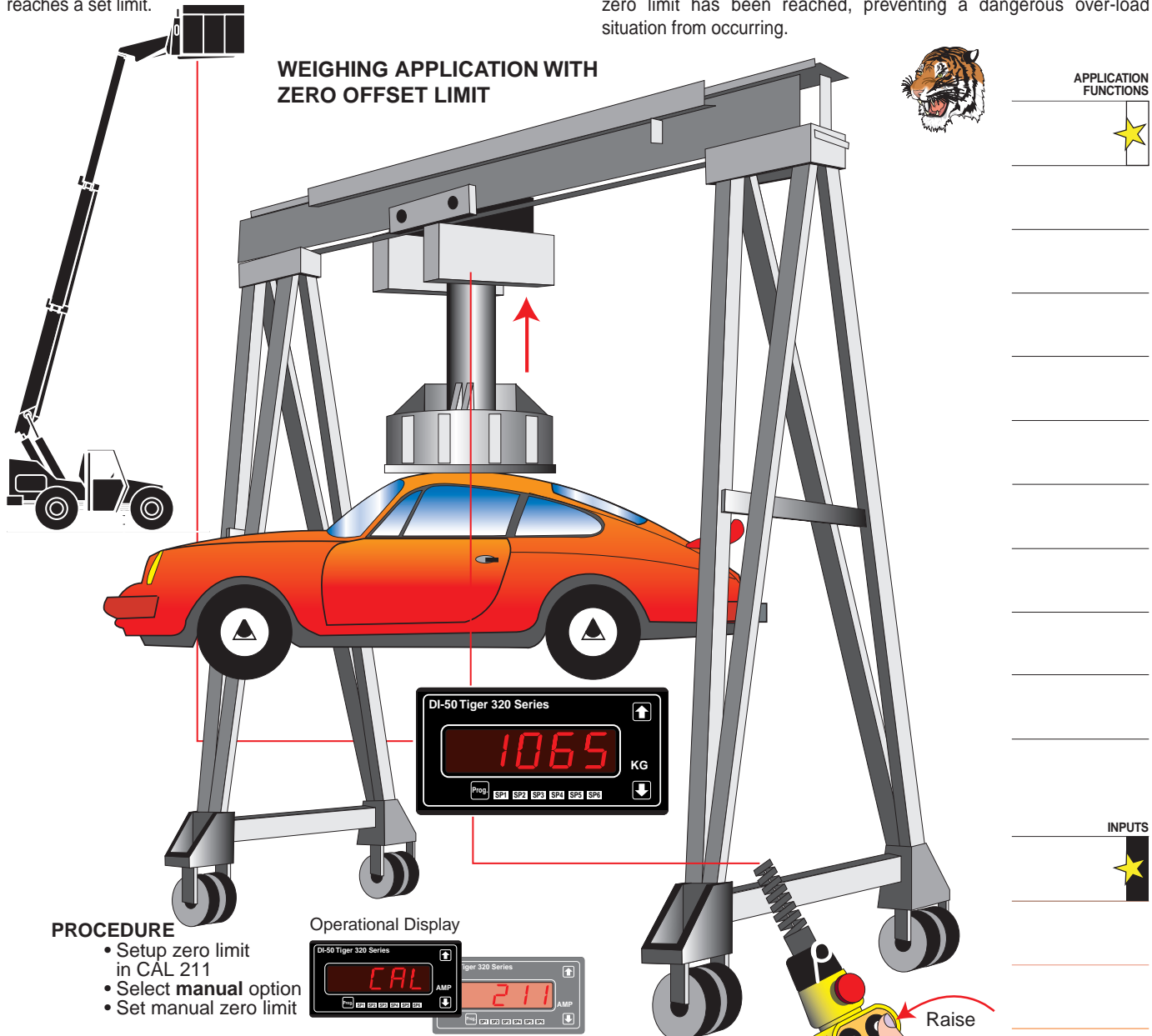
The bargraph changes to GREEN. Valves **C** and **D** open. The cold water pump starts. When the temperature reaches the LOW setpoint, the display scrolls: **PROCESS COMPLETE**



41 Weighing Application with Zero Offset Limit

Our customer operates a crane with an electromagnet to lift and weigh scrap metal. Due to residual scrap metal remaining attached to the electromagnet it needs to be set to zero regularly by the operator during daily operations. For safety reasons and accuracy, the electromagnet must be cleaned when the amount of residual scrap reaches a set limit.

Texmate installed a Tiger 320 Series controller to display the weight and perform the display zero operations. The controller has a manual zero with the zero offset held in non-volatile memory, therefore maintaining the zero offset value in the event of a power failure. The zero function can be programmed to inhibit the zero offset when the zero limit has been reached, preventing a dangerous over-load situation from occurring.

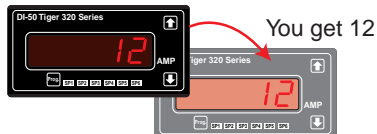
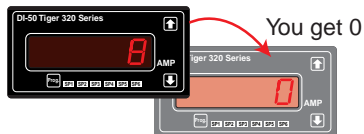
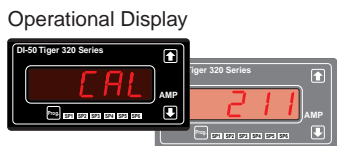


PROCEDURE

- Setup zero limit in CAL 211
- Select manual option
- Set manual zero limit

EXAMPLE

- Set manual zero limit to 10
- If display is less than 10 and zero pressed, display will zero
- If display is greater than 10 and zero pressed, display will not zero

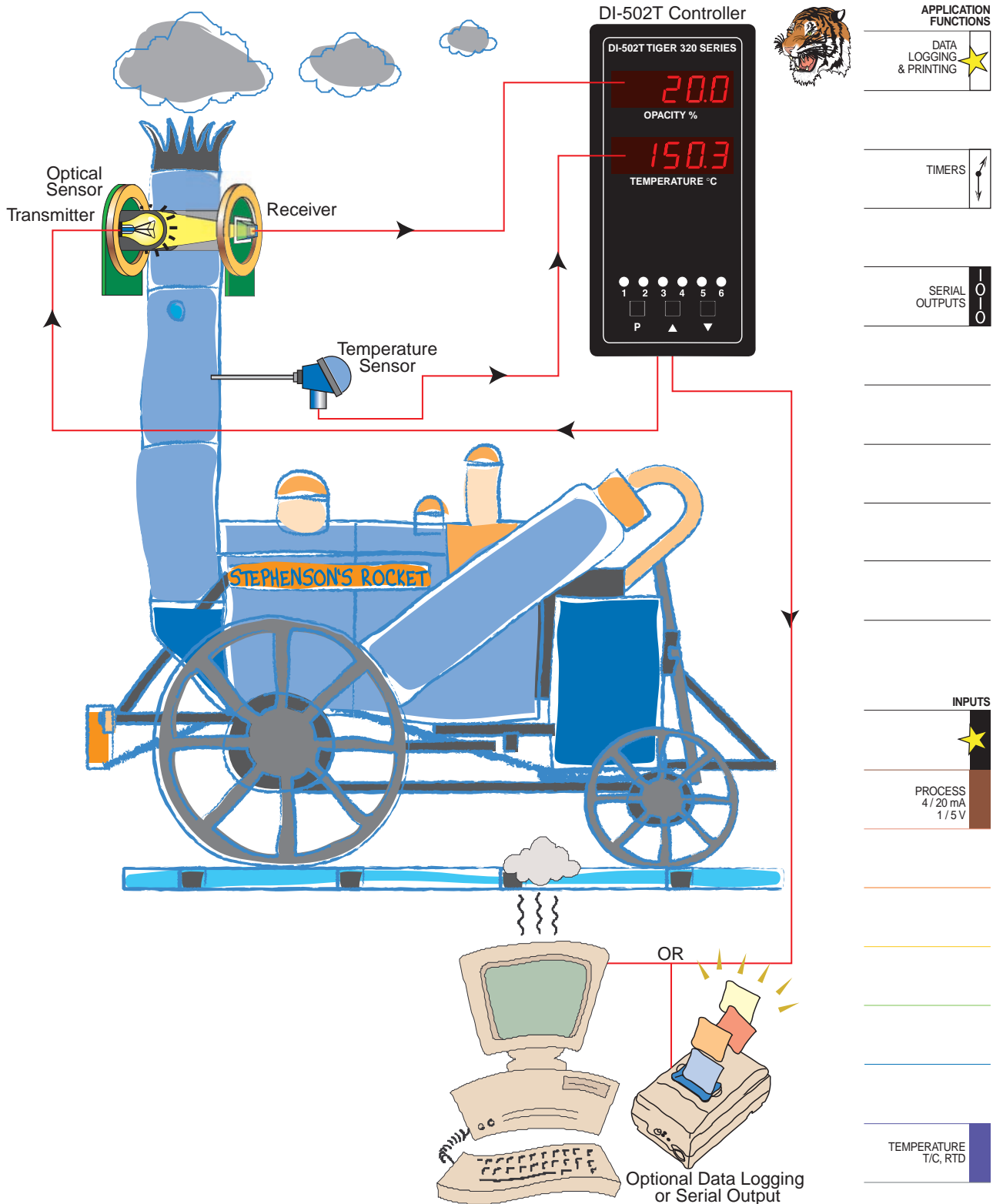


LOAD-CELL PRESSURE

With the mounting pressure to clean up the atmosphere, many local authorities are now legislating the maximum density of smoke released into the atmosphere from chimneys. They now require chimney output opacity (smoke density) and temperature to be monitored, averaged and recorded at one minute intervals with a date and time stamp.

Texmate installed a Tiger 320 Series DI-502T controller displaying the averaged opacity and minimum temperature readings. The controller can be programmed to either data log these readings every minute, or download them directly to a serial printer. After each download, the controller resets the readings for the next calculation and download.

SMOKE DENSITY AND TEMPERATURE MONITOR



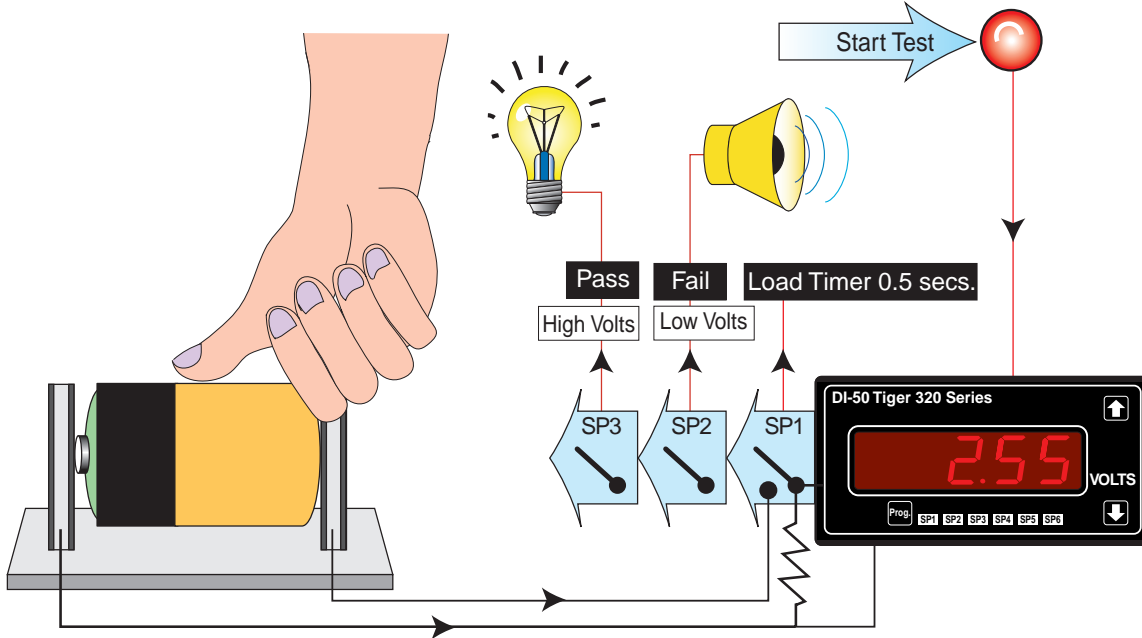
As a programmable meter controller (PMC), the Tiger 320 Series is adaptable to one-off final assembly and quality control test jigs. The modular design of the PMC and the vast choice of input signal conditioning modules, allows production engineers to overcome many quality control challenges.

The following battery and the lamp tests are basic examples of how the PMC can be designed into the production process.

TEST RIGS FOR QUALITY CONTROL APPLICATIONS

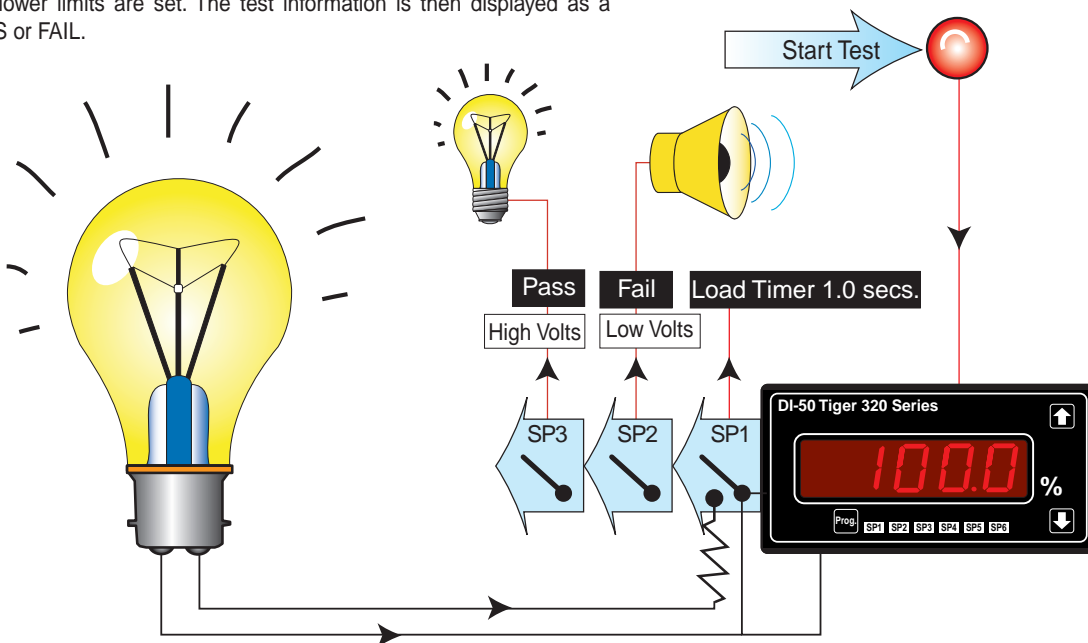
BATTERY TEST

Our customer requires to test batteries for output under load. A Tiger 320 Series controller is programmed to measure the volt drop across a load for 0.5 seconds. The test information is then displayed as a PASS or FAIL.



LAMP TEST

Our customer quality tests automotive lamps for wattage output. The voltage and current are measured for a 1.0 sec. duration. Upper and lower limits are set. The test information is then displayed as a PASS or FAIL.



APPLICATION FUNCTIONS

★
RELAY OUTPUTS
TIMERS

SEQUENCE CONTROLS

TEXT MESSAGING

INPUTS

DUAL DCV / MV ★

VOLTS AC / DC

WATTS AC / DC

Demand and peak demand are important measurements for large consumers of electricity. This is because the price utilities charge for electricity is related to the peak usage of the consumer over the billing period.

The **Electronic Demand Meter** from Texmate is ideal as a submetering system that can measure and track demand and peak demand in different parts of the factory. This information can then be used to manage the overall peak demand strategy of the factory.

If the real-time clock option is installed in the **electronic demand meter**, the meter can log or print the time the peak demand occurred.

The 6 setpoints can be used for load switching or alarms.

If an IWO2 watt input module is installed, the amps, volts, frequency kW, and kWh power factor readings can be viewed by using the UP and DOWN buttons.

One of three different techniques can be selected to measure demand.

1. Fixed Time or Block Internal Demand.

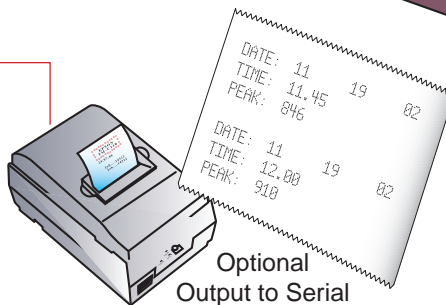
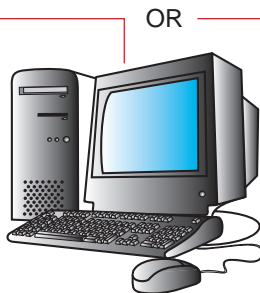
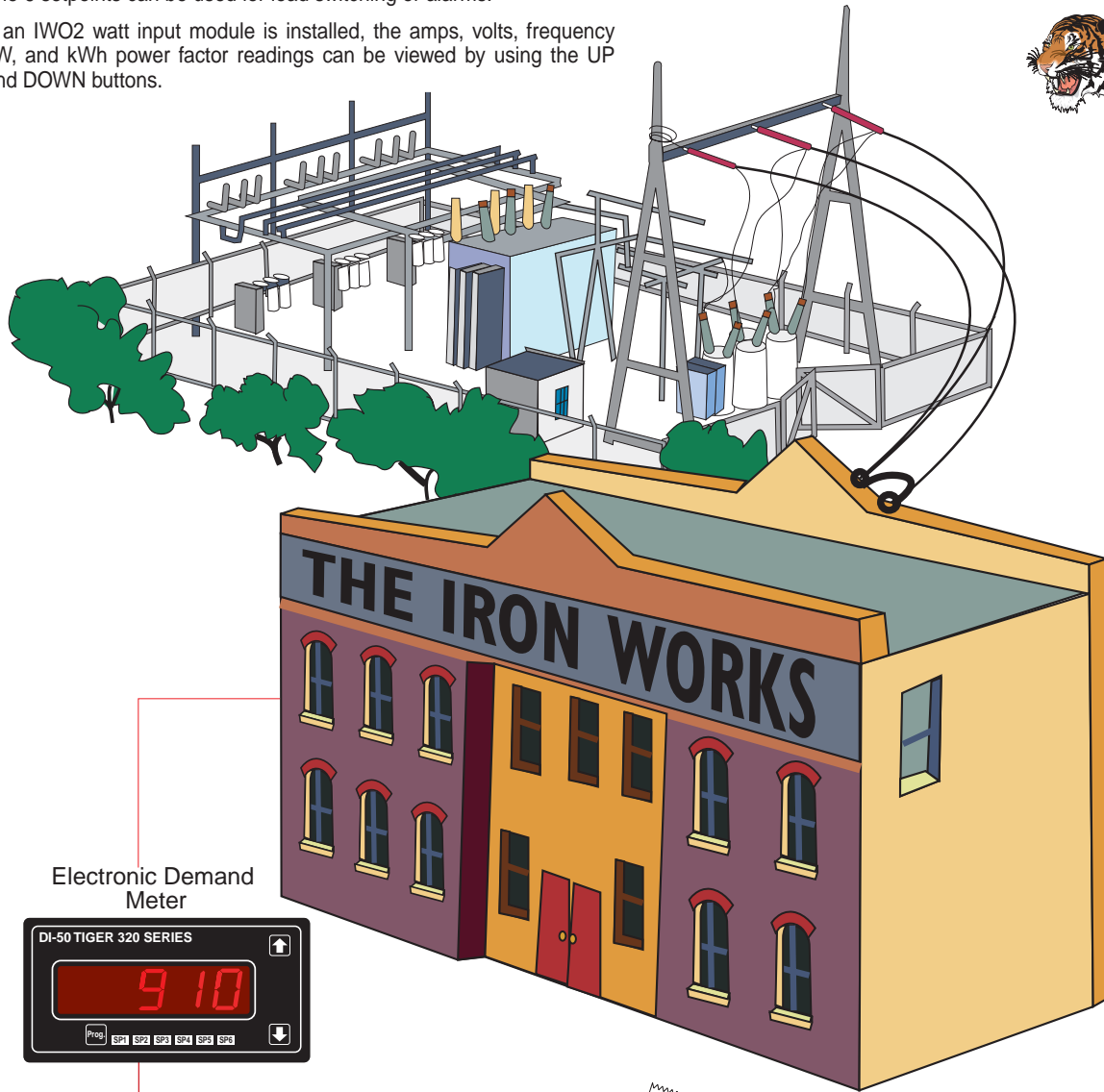
In this mode, the demand is the average of the signal (normally AC current, power or apparent power) over a set time programmable from 1 - 60 minutes.

2. Sliding Demand.

This is the average of the previous 15 minutes updated every 100 msec.

3. Thermal Demand.

An algorithm is used which simulates the thermal response of an analog demand meter. The demand setting can be programmed from 1 - 60 minutes.



Optional Output to Serial Printer or PC

APPLICATION FUNCTIONS

RELAY OUTPUTS

SERIAL OUTPUTS

TOTALIZERS

CALCULATIONS

INPUTS

VOLTS AC

AMPS AC

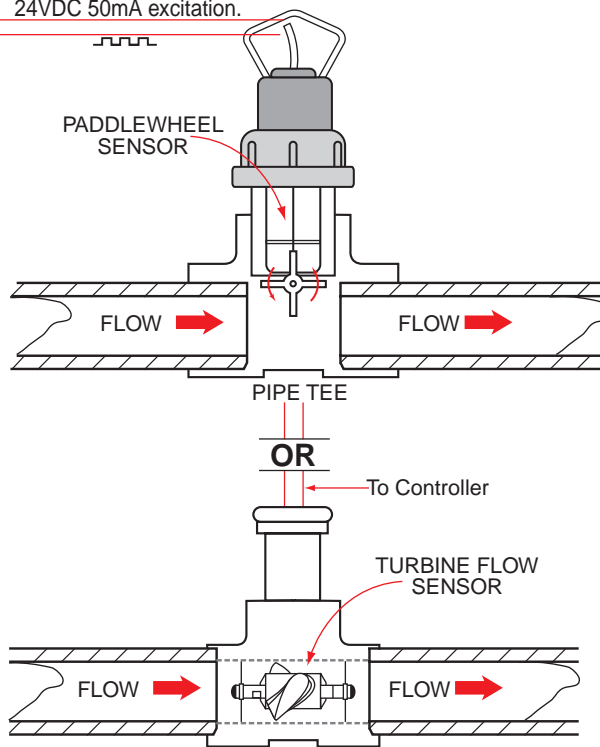
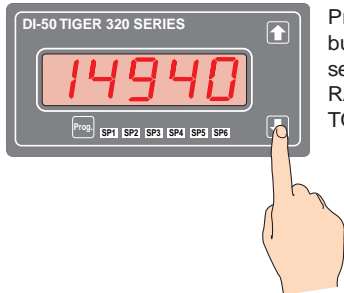
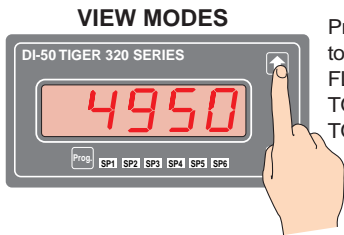
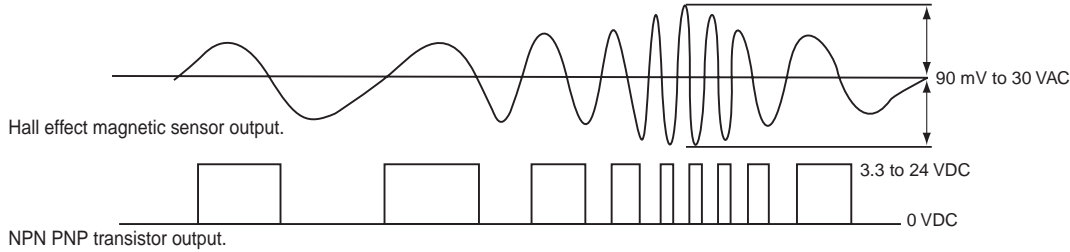
WATTS AC

FREQUENCY



Paddlewheel and turbine flow sensors are similar in operation as they rely on the energy in the flow stream to spin the rotor. The spinning rotor generates either a sinusoidal or square wave output. Most paddlewheel and turbine flow sensors use rotors with magnets embedded in each blade. The magnets are used together with a coil to

produce the sinusoidal output (Hall effect sensors), or trigger an electronic switch to produce a square wave output (NPN or PNP transistor output sensors). The resultant frequency is directly proportional to the flow rate.



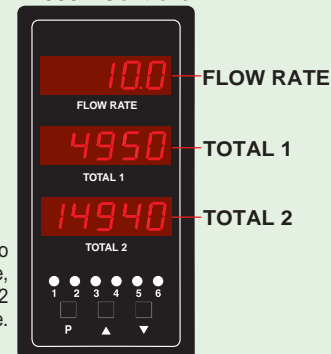
APPLICATION FUNCTIONS	
★	RELAY OUTPUTS
↕	TIMERS
~	ANALOG OUTPUTS
□	SERIAL OUTPUTS
+	TOTALIZERS
+	CALCULATIONS
ABC	TEXT MESSAGING
★	INPUTS

With a variety of input interface options available, the IF10 universal frequency/counter input module accepts almost all pulse output sensor signals. Combined with the IF10, the Tiger 320 Series controller is ideal for all your flow, totalizing, and flow control applications.

OPTIONS & VARIATIONS

- Dual totalizers with independent scaling, programmable rollover and low flow cutoff.
- Setpoints can be used:
 - For batching and mixing applications.
 - For maximum and minimum flow alarms.
 - To retransmit a pulse to a main control system for total flow information.
 - To log data and reset totals.
- The PID 4-20 mA output can be used to precisely control pumps.
- The controller can transmit information to a control and monitoring system, or receive external communication.

DI-503E Controller



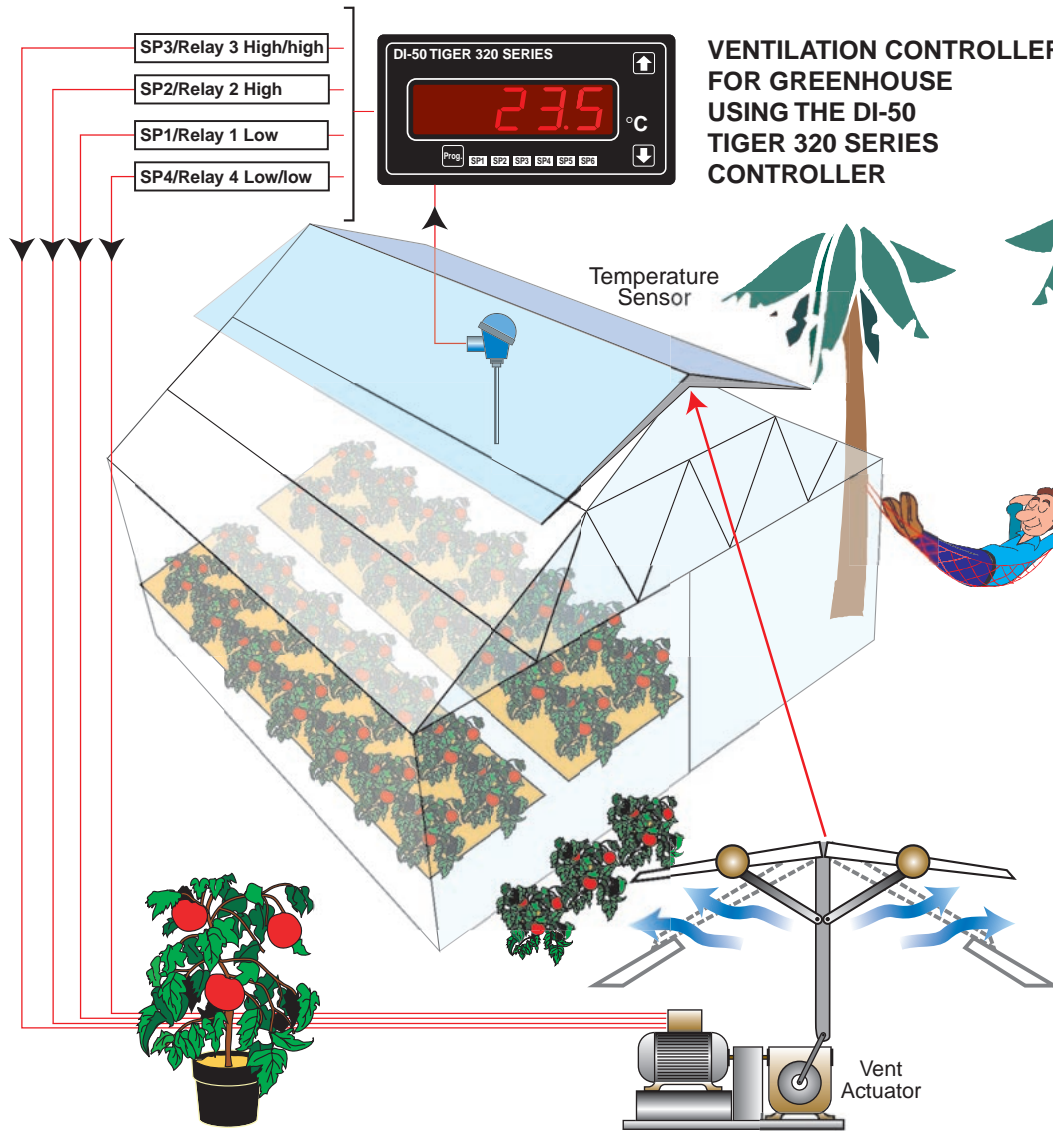
- Use a DI-503 to display flow rate, TOTAL1, or TOTAL2 at the same time.

FREQUENCY
RPM, Pulse, Counter

Our customer has a greenhouse. The greenhouse temperature is controlled by opening and closing the roof vents using a forward and reverse motor. When the temperature rises above the setpoint, the vent actuator motor operates for a programmed ON-time opening the vents 10 degrees. After a programmed OFF-time, if the temperature is above the high / high setpoint, the vents open in 20 degree increments

until the temperature falls below the high setpoint. If the temperature in the greenhouse falls below the low setpoint, the vents progressively close keeping the greenhouse temperature within required limits.

Note: The relays are programmed in the repeat mode (programmable ON/OFF-time).



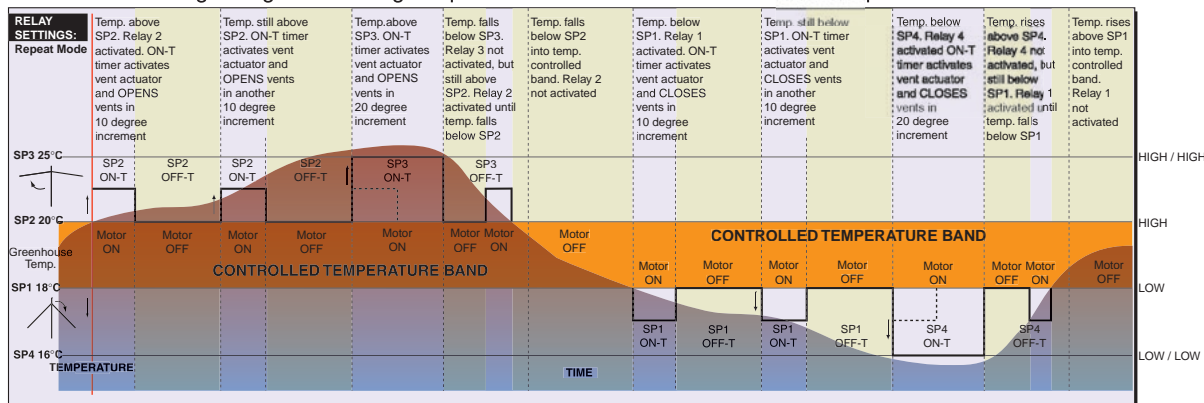
VENTILATION CONTROLLER FOR GREENHOUSE USING THE DI-50 TIGER 320 SERIES CONTROLLER

APPLICATION FUNCTIONS	
SPECIAL	★
RELAY OUTPUTS	⚡
TIMERS	⌚

INPUTS



Logic diagram showing temperature above and below controlled temperature band



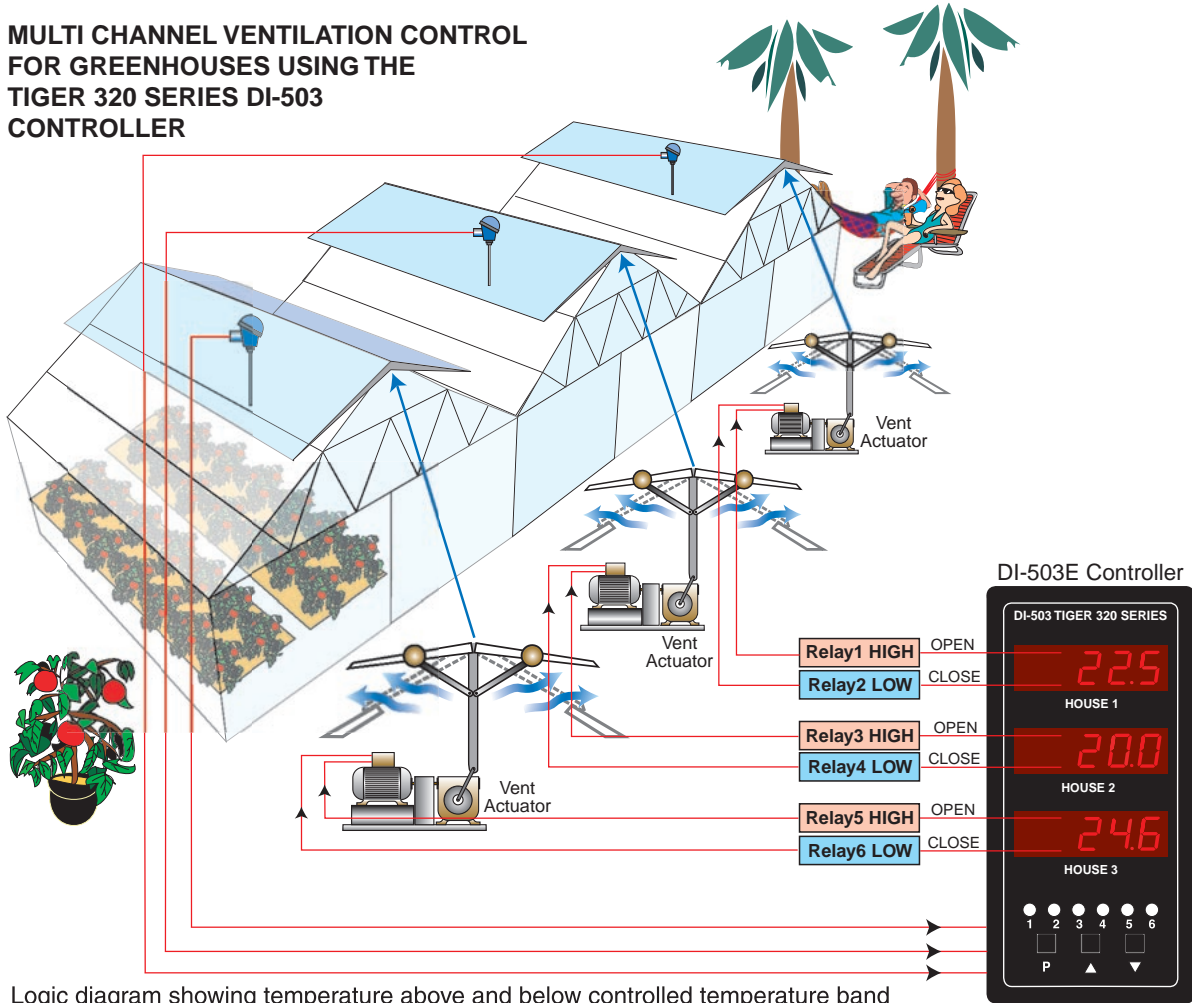
Our customer has greenhouses. The greenhouse temperatures are controlled by opening and closing the roof vents using a forward and reverse motor. When the temperature rises above the setpoint, the vent actuator motor operates for a programmed ON-time opening the vents 10 degrees. After a programmed OFF-time, if the temperature is above the high setpoint, the vents open in 20 degree increments

until the temperature falls below the high setpoint. If the temperature in the greenhouses falls below the low setpoint, the vents progressively close keeping the greenhouse temperature within required limits.

Note:
The relays are programmed in the repeat mode (programmable ON/OFF-time).

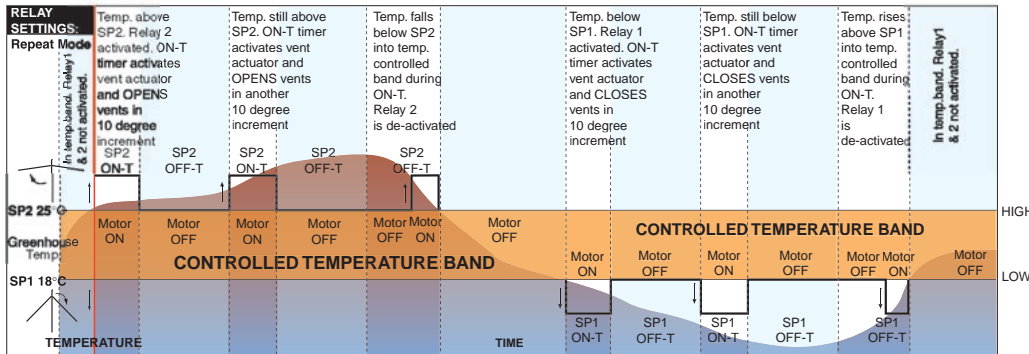


MULTI CHANNEL VENTILATION CONTROL FOR GREENHOUSES USING THE TIGER 320 SERIES DI-503 CONTROLLER



APPLICATION FUNCTIONS	
SPECIAL	★
RELAY OUTPUTS	⏏
TIMERS	⏰

Logic diagram showing temperature above and below controlled temperature band



TEXMATE CONTROLLERS FOR THIS APPLICATION		
Order Codes	Comments	List Price in US\$
DI-503E—RRR—PSI—ITTC—OR34		US\$ 515.00
Prices are for listed components only and do not include configuration charges if applicable. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.		

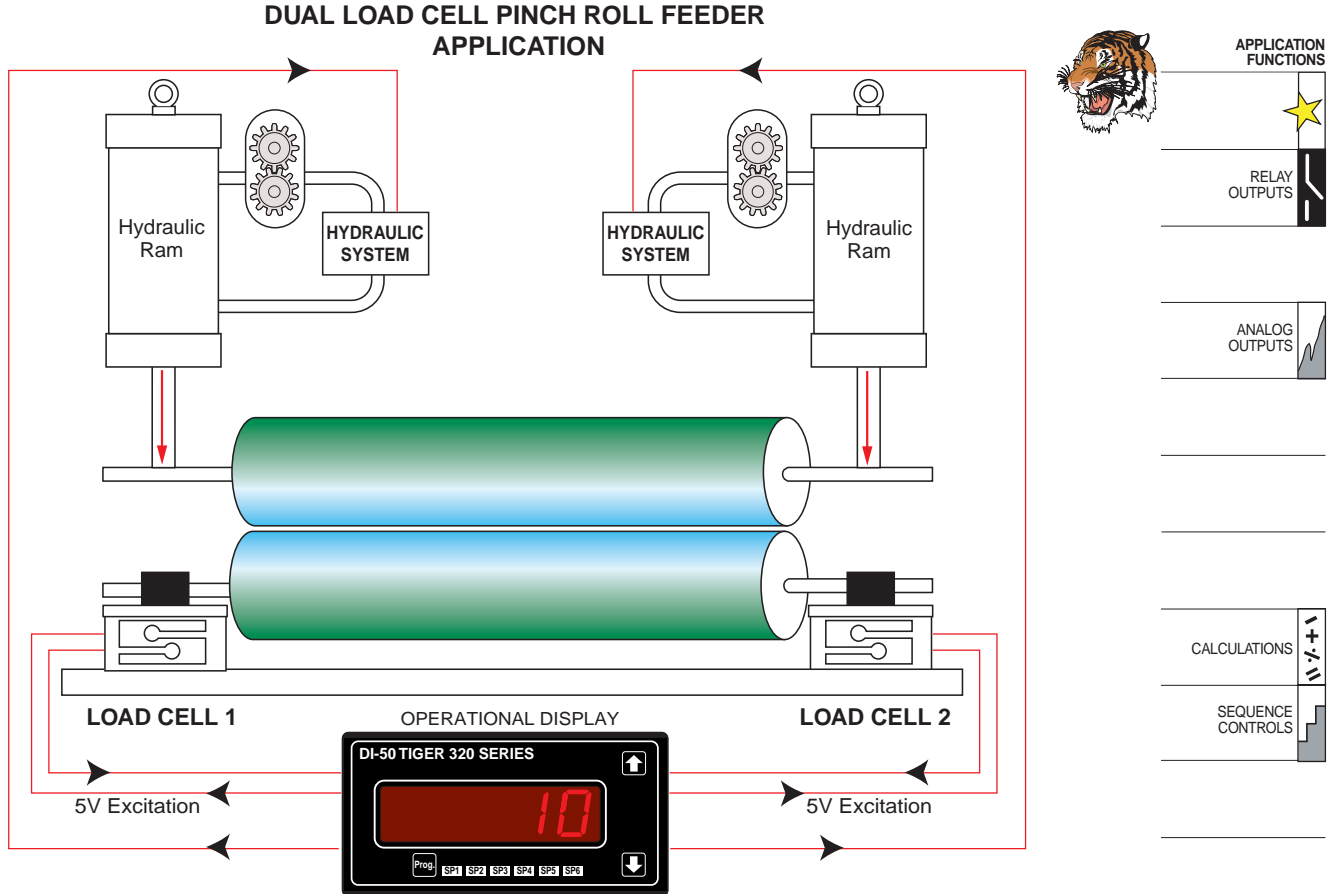
Texmate cannot assume responsibility for any application process described. No process patent licenses are implied. Texmate reserves the right to change processes, equipment, specifications, and prices without notice at any time.

INPUTS	
1	★
2	
3	
4	
5	
6	

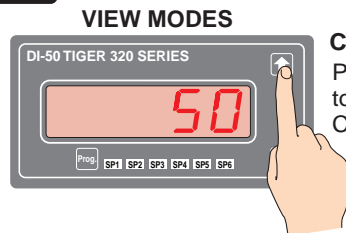
Our customer has a feed roller system. They require to monitor and maintain a constant pressure between the two ends of the bottom roller to maintain a straight feed.

The bearings at each end of the bottom roller are mounted on a separate load cell. The output from each load cell is connected directly into a Tiger 320 Series controller.

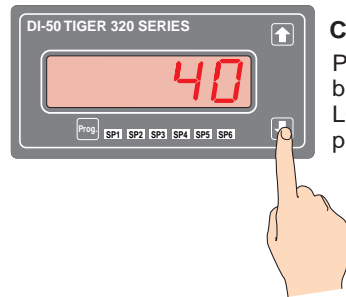
The controller displays the difference in pressure between load cell 1 and load cell 2. If load cell 1 is lower than load cell 2, the controller displays the negative difference. If load cell 1 is higher than load cell 2, the controller displays the positive difference. If both pressures are equal, the controller displays 0.



RESULT
Displaying differential pressure between LOAD CELL1 and LOAD CELL 2



CHANNEL 1
Press the UP button to display LOAD CELL1 pressure.

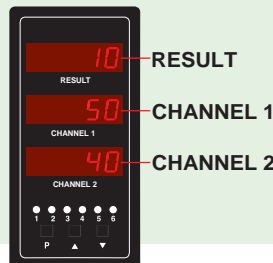


CHANNEL 2
Press the DOWN button to display LOAD CELL2 pressure.

OPTIONS & VARIATIONS

- A Tiger 320 Series controller can be used to control the hydraulic pressure system:
 - A 4-20mA PID output from the controller can be used to precisely control the pressure to the hydraulic ram.
 - All data can be captured and transmitted to a control and monitoring system.

DI-503E Controller



- Use a DI-503 to display differential pressure, load cell 1 pressure, and load cell 2 pressure at the same time.

APPLICATION FUNCTIONS

RELAY OUTPUTS

ANALOG OUTPUTS

CALCULATIONS

SEQUENCE CONTROLS

INPUTS

DUAL LOAD CELL

LOAD-CELL PRESSURE

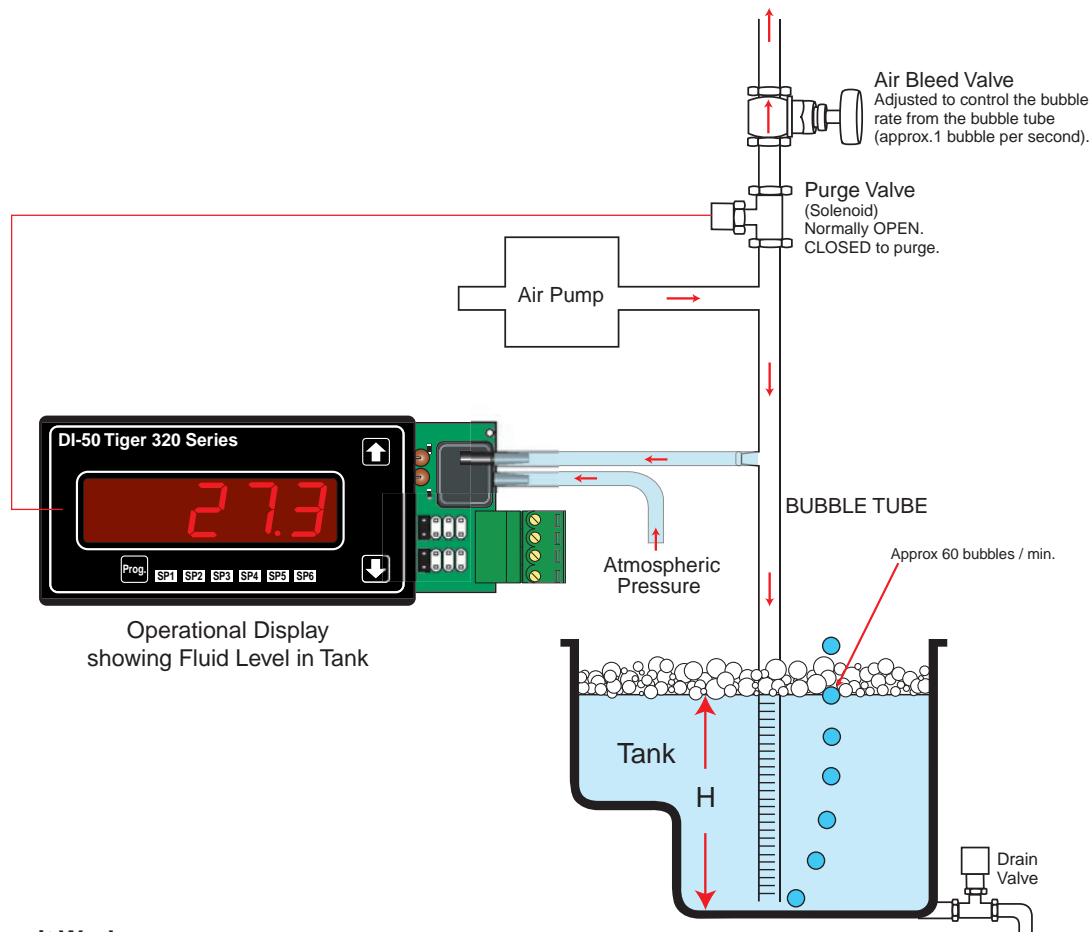
Bubbler systems are ideal for level measurement in tank situations where debris, foam, steam, or surface turbulence makes standard methods of level measurement impractical. Most bubbler systems require an independent pressure transmitter, a display, and a control system. Texmate have

combined their new differential pressure sensor input module with the Tiger 320 Series controller to perform direct pressure measurement as a complete unit. The functionality and versatility of the Tiger controller provides level measurement with complete system control, monitoring and data logging.



APPLICATION FUNCTIONS

★
RELAY OUTPUTS
TIMERS
REGISTER RESETS
TOTALIZERS
CALCULATIONS
SEQUENCE CONTROLS
LINEARIZATION



How it Works.

The bubbler system supplies a constant rate of air flow through a small diameter tube anchored near the bottom of the tank. The amount of pressure required to force the air bubble out of the bottom of the tube is equal to the hydrostatic pressure at that point (i.e. the deepest point in the tank). This is calculated using the formula

$$H = \frac{P}{Sg}$$

P = pressure in inches or centimeters of water.

H = fluid level in inches or centimeters.

Sg = specific gravity of the liquid.

The air pressure output from the bubble tube must be approximately 3.5 psi (24 kPa) above the maximum hydrostatic pressure in the liquid (i.e. the pressure at the bottom of the tank). The air bleed valve is adjusted to achieve a bubble rate of approximately 60 bubbles / minute by bleeding off excess air pressure to atmosphere. A solenoid valve is installed between the air bleed valve and the bubble outlet and is closed to purge the bubble tube of debris.

Advantages.

The combination of the Tiger 320 Series

controller and the direct differential pressure sensor input module, provides the following standard functions to improve accuracy and control of bubbler systems:

- Resident 32-pt linearization tables are available in the controller for linearity correction in irregular shaped tanks for volume measurement.
- Setpoints and relays are available for control functions such as closing the purge valve due to either a high pressure signal due to blocked pipe, or from a resident timer.
- Monitoring and logging all system data directly to a PC or serial printer.

INPUTS

★

TEXMATE CONTROLLERS FOR THIS APPLICATION	
Order Codes	Comments
DI-50E—DR—PSI—IGYX	

Texmate supply input modules to suit most standard and many special sensors. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

Texmate cannot assume responsibility for any application process described. No process patent licenses are implied. Texmate reserves the right to change processes, equipment, specifications, and prices without notice at any time.

Our customer requires the amount of resin and roving used during their manufacturing operation to be calculated, monitored, and recorded on a job-by-job basis, providing them with accurate costing and stock information.

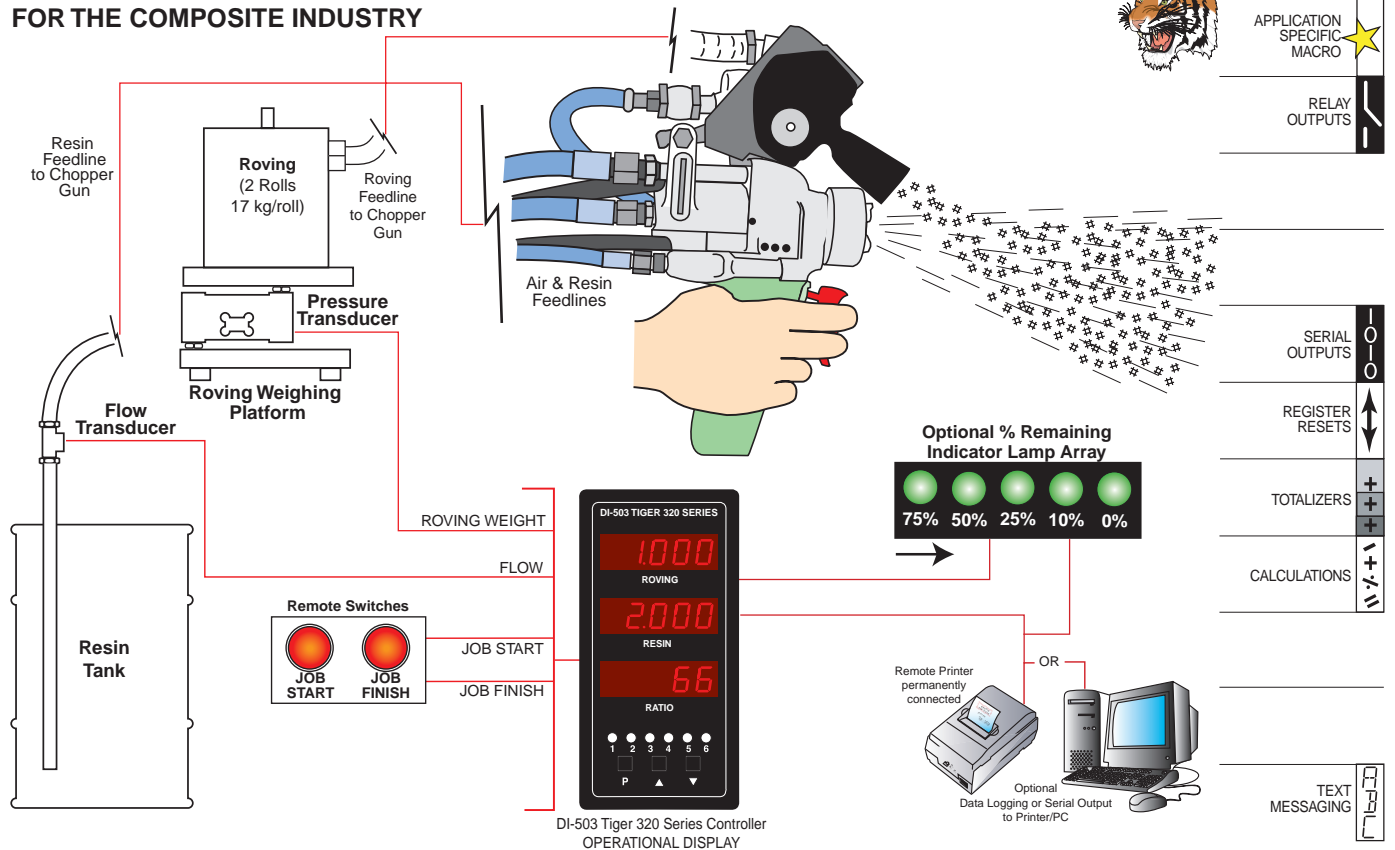
Texmate installed a Tiger 320 Series controller and connected it to the resin feedline flow transducer and the roving weighing platform pressure transducer.

The flow transducer measures the flow of the resin used, while the pressure transducer measures the weight of glass roving used.

Both measurements are displayed on the controller. From these inputs, the controller calculates and displays the ratio of glass roving to resin used.

These figures can then be downloaded as a job recipe and used for future reference when the job is repeated.

RESIN TO ROVING RATIO AND PROGRESS MONITORING SYSTEM FOR THE COMPOSITE INDUSTRY



What it Does.

- Reduces Material Costs.
- Improves Daily Material Totals and Costs.
- Improves Quality.
- Monitors Wastage.
- Provides Consistent Layups.
- Maximizes Productivity Time.

How it Works.

The flow transducer measures the flow of resin used, and totals and displays the flow on the middle display of the monitoring controller.

The weighing platform measures the weight of glass roving being used and displays the weight on the top display.

The controller calculates the ratio of glass to resin and displays the ratio on the bottom display.

Pressing the remote DAILY RESET switch resets the controller at the end of each working day and resets the daily job number to zero. The controller sends the following data to a permanently

connected serial printer or computer.

- Daily resin totals used per system.
 - Daily roving totals used per system.
- Pressing the remote JOB START switch at the beginning of a job resets the totals to zero and adds 1 to the job number after each job.

The meter sends the following data to a permanently connected serial printer or computer.

- Date, Month, Year, Hrs:Min:Secs.
- Job number of the day.
- Resin target weight per job.
- Flow of resin used per job.
- Weight of roving used per job.
- Ratio of resin to roving per job.

Enter the target weight of resin for the next job into the controller. This function resets the % target resin remaining indicators.

Start the job, % remaining indicator lamps that indicate the resin remaining for the job at 75%, 50%, 25%, 10%, and

0% light up progressively as the amount of roving/resin decreases. The 0% setpoint can be used to activate an audible device or a cutout switch. The 10% indicator can be programmed to flash when activated.

When the job is completed, press the remote DAILY RESET switch. The controller is tared and 1 is added to the previous job number and you are now ready for the next job. The new resin weight is entered and the process is repeated.

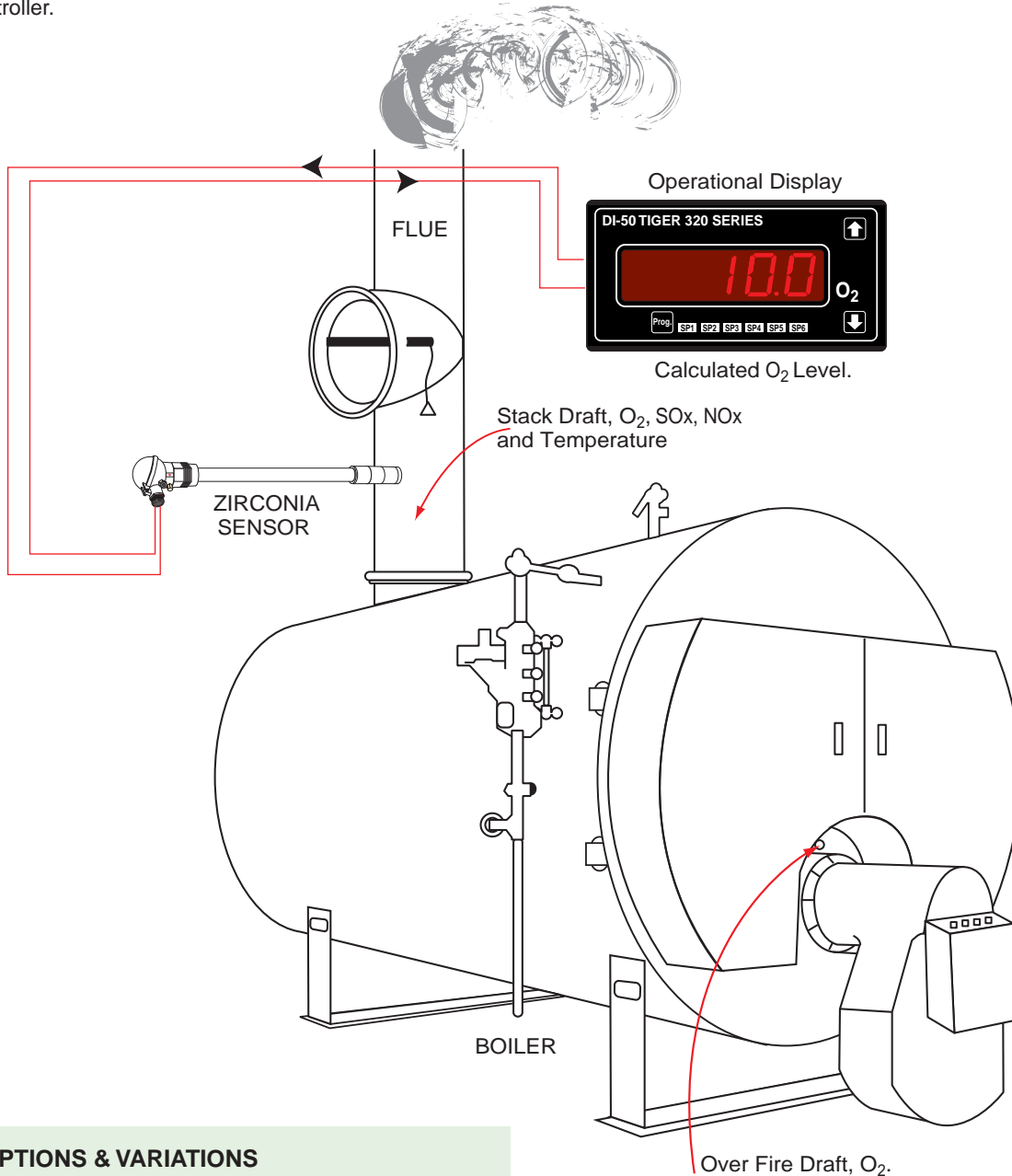
Options.

- Setpoint 6 on the monitoring controller can be used to indicate the correct resin to roving ratio. This operates and indicates when the glass/roving ratio is within acceptable limits.
- Array of indicator lamps.
- RS-232 Serial Printer or PC.

O₂ is an important parameter to measure and control in kilns and furnaces. The diagram below shows the Tiger 320 Series DI-50 controller connected to a Zirconia O₂ sensor with a built-in thermocouple.

The controller calculates the O₂ level from the temperature and mV level of the sensor. The result is then displayed on the controller.

The Tiger provides a reliable, cost-effective solution, enabling even very small boilers to be upgraded to reduce pollution and save on fuel costs.



APPLICATION FUNCTIONS

★
RELAY OUTPUTS
TIMERS
ANALOG OUTPUTS
SERIAL OUTPUTS

CALCULATIONS

LINEARIZATION
TEXT MESSAGING

INPUTS
ZIRCONIA SENSOR ★

VOLTS / DC

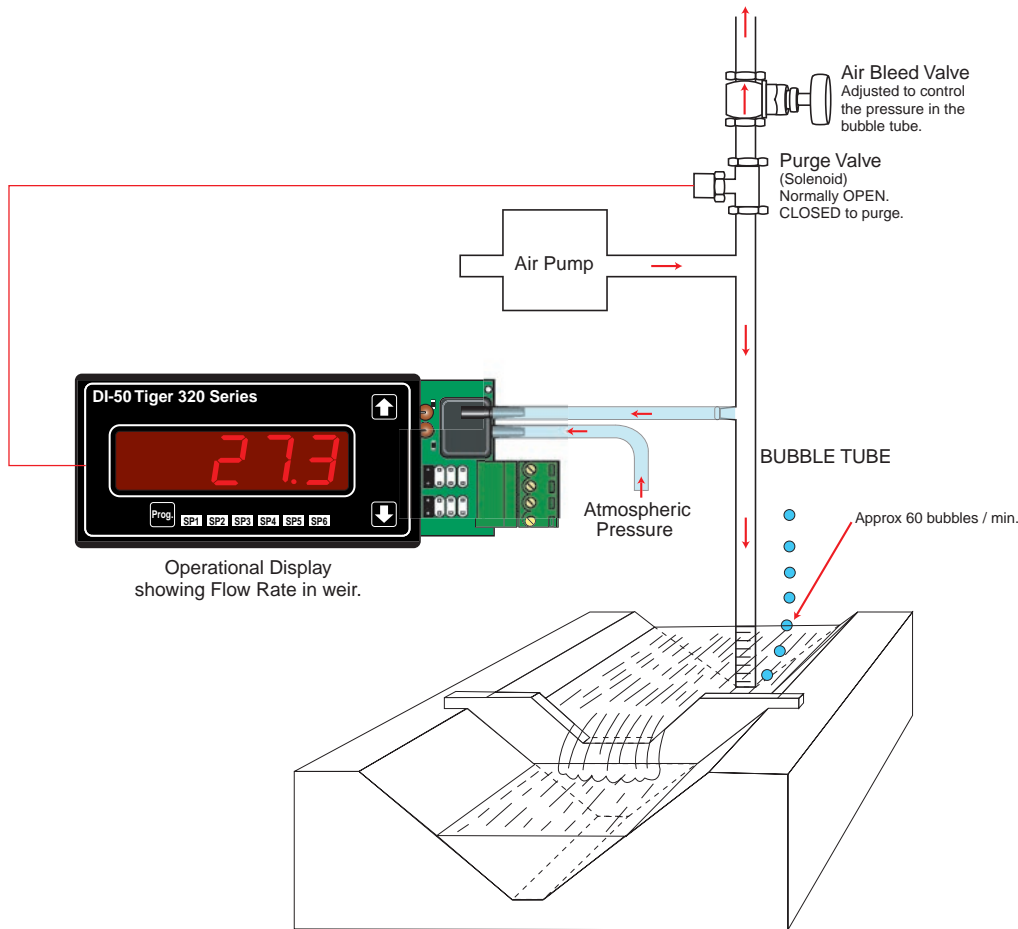
TEMPERATURE T/C, RTD

OPTIONS & VARIATIONS

- The Tiger 320 Series controller can be used for a variety of purposes:
 - To retransmit the O₂ via a 4-20 mA signal to a combustion controller.
 - Act as a safety interlock if the O₂ level becomes dangerous.
 - To control the O₂ by adjusting the air intake into the furnace.
- The Tiger 320 Series controller can also interface to probes that require a heater and provide auto calibration sequencing for probes that have a calibration gas input.

Bubbler systems are ideal for flow measurement of open channel run off systems or duct situations where debris, foam, steam, or surface turbulence makes standard methods of flow measurement impractical. Most bubbler systems require an independent pressure transmitter, a display, and a control system. Texmate have combined their new

differential pressure sensor input module with the Tiger 320 Series controller to perform direct pressure measurement as a complete unit. The functionality and versatility of the Tiger controller provides flow, and total measurement with complete system control, monitoring and data logging.



Operational Display showing Flow Rate in weir.



APPLICATION FUNCTIONS	
★	
RELAY OUTPUTS	⏏
TIMERS	⏰
REGISTER RESETS	↕
TOTALIZERS	+
CALCULATIONS	⚙
SEQUENCE CONTROLS	⏮
LINEARIZATION	⌘

How it Works.

The bubbler system supplies a constant volumetric rate of air flow through a small diameter tube anchored in the flow stream. The amount of pressure required to force the air bubble out of the bottom of the tube is equal to the hydrostatic pressure at that point (i.e. the deepest point in the weir). This is calculated using the formula

$P = L \times (Sg)$, where:

P = pressure in inches or centimeters of water.

L = liquid level in inches or centimeters.

Sg = specific gravity of the liquid.

The air pressure output from the bubble tube must be approximately 3.5 psi (24 kPa) above the maximum hydrostatic pressure in the liquid flow (i.e. the pressure at the bottom of the weir). The air bleed valve is adjusted to achieve a bubble rate of approximately 60 bubbles / minute by bleeding off excess air pressure to atmosphere. A solenoid valve is installed between the air bleed valve and the bubble outlet and is closed to purge the bubble tube of debris.

Advantages.

The combination of the Tiger 320 Series controller and the direct differential

pressure sensor input module, provides the following standard functions to improve accuracy and control of bubbler systems:

- Resident 32-point linearization tables are available in the controller for linearity correction, required for flow measurement in weirs, etc.
- Setpoints and relays are available for control functions such as closing the purge valve due to either a high pressure signal due to blocked pipe, or from a resident timer.
- Monitoring and logging all system data directly to a PC or serial printer.

INPUTS	
★	DIRECT PRESSURE

TEXMATE CONTROLLERS FOR THIS APPLICATION

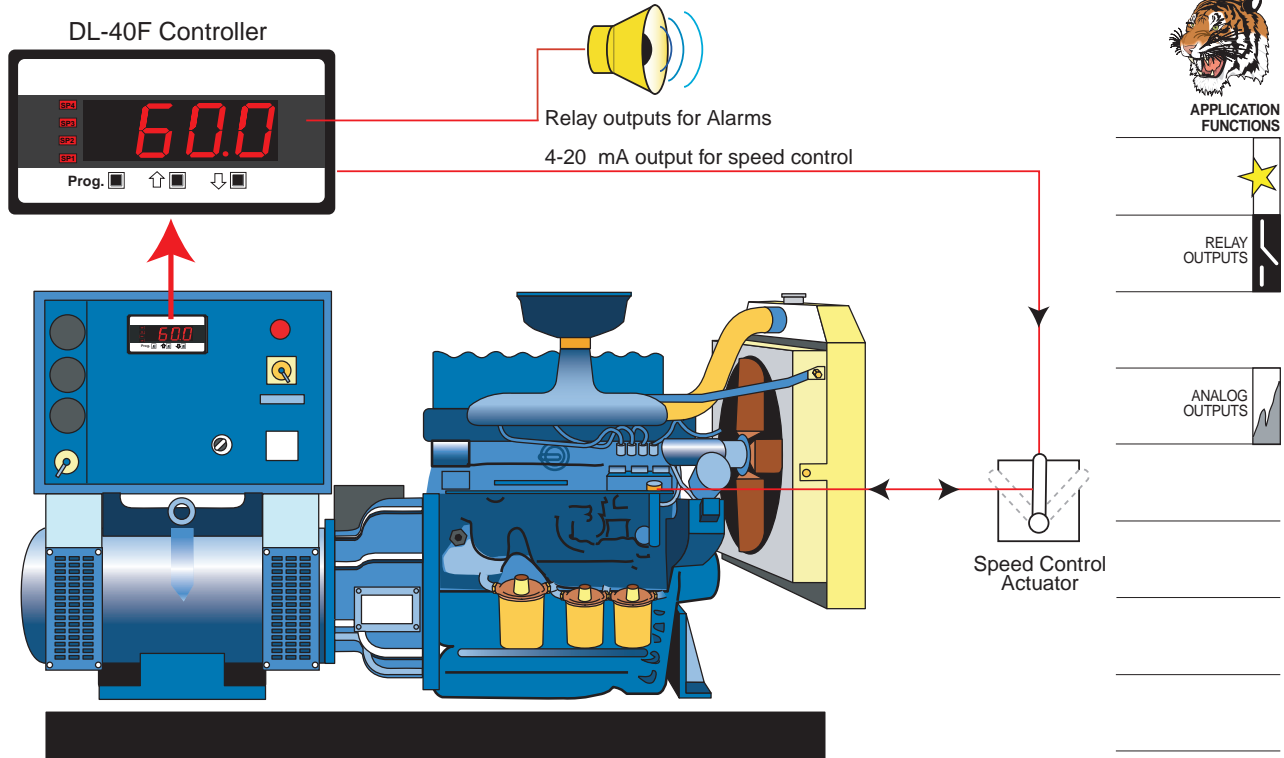
Order Codes	Comments
DI-50	
DI-503	Display flow rate and total flow rate.
DI-503	Use dual input module display, 2 channels and reset.

Texmate supply input modules to suit most standard and many special sensors. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

Texmate cannot assume responsibility for any application process described. No process patent licenses are implied. Texmate reserves the right to change processes, equipment, specifications, and prices without notice at any time.

Our customer has a motor generator set that requires to be controlled at 60 Hz output frequency.
 Texmate installed a DL-40F controller to measure and display the frequency and to control the motor speed control actuator via the 4-20 mA analog output. The analog output is scaled at 55 Hz for 4 mA and

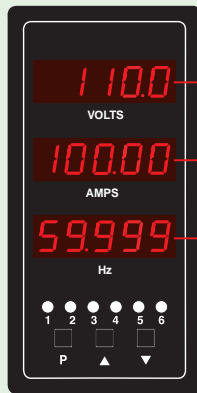
65 Hz for 20 mA. The speed control actuator is set to 12 mA to govern the speed at a generator output of 60.0 Hz.
 If the frequency falls below 60.0 Hz, the motor speed increases.
 If the frequency rises above 60.0 Hz, then the motor speed decreases.



OPTIONS & VARIATIONS

- Up to 6 super smart relay outputs, digitally programmable upper and lower limits.
- Programmable deviation mode, hysteresis mode, latch ON or latch OFF.
- Built-in super smart timers on each setpoint.
- Programmable DOM to eliminate nuisance tripping.
- Power ON inhibit to avoid tripping during power up.
- 4-20 mA or dual 0-10 V, 16-bit analog output.
- RS-232 or RS-485.
- DeviceNet / ModBus.
- Direct serial printer output.
- Data logging with real-time clock.

DI-503 Controller



VOLTAGE INPUTS
0-300 VAC or 0-700 VAC

CURRENT INPUTS
0-1 amp (CT) or 0-5 amp (CT)

4-20 mA
to speed actuator

From
Generator
Output

DISPLAY AND CALCULATE

Voltage (R.M.S.). Current (R.M.S.).
 Frequency. Watts, kilowatts. Watt hours, kilowatt hours.
 Power factor monitoring for precise load sensing.

INPUTS



VOLTS AC

AMPS AC

TEXMATE CONTROLLERS FOR THIS APPLICATION

Order Codes	Comments
DL-40F-DR-PSI-IF08-AIC	4-20mA output for speed control. Relays for alarms
DI-503-DR-PSI-IWO5-AIC	Control and display frequency, volts and amps. PS, kW, kWh, kUAR, kUARh.

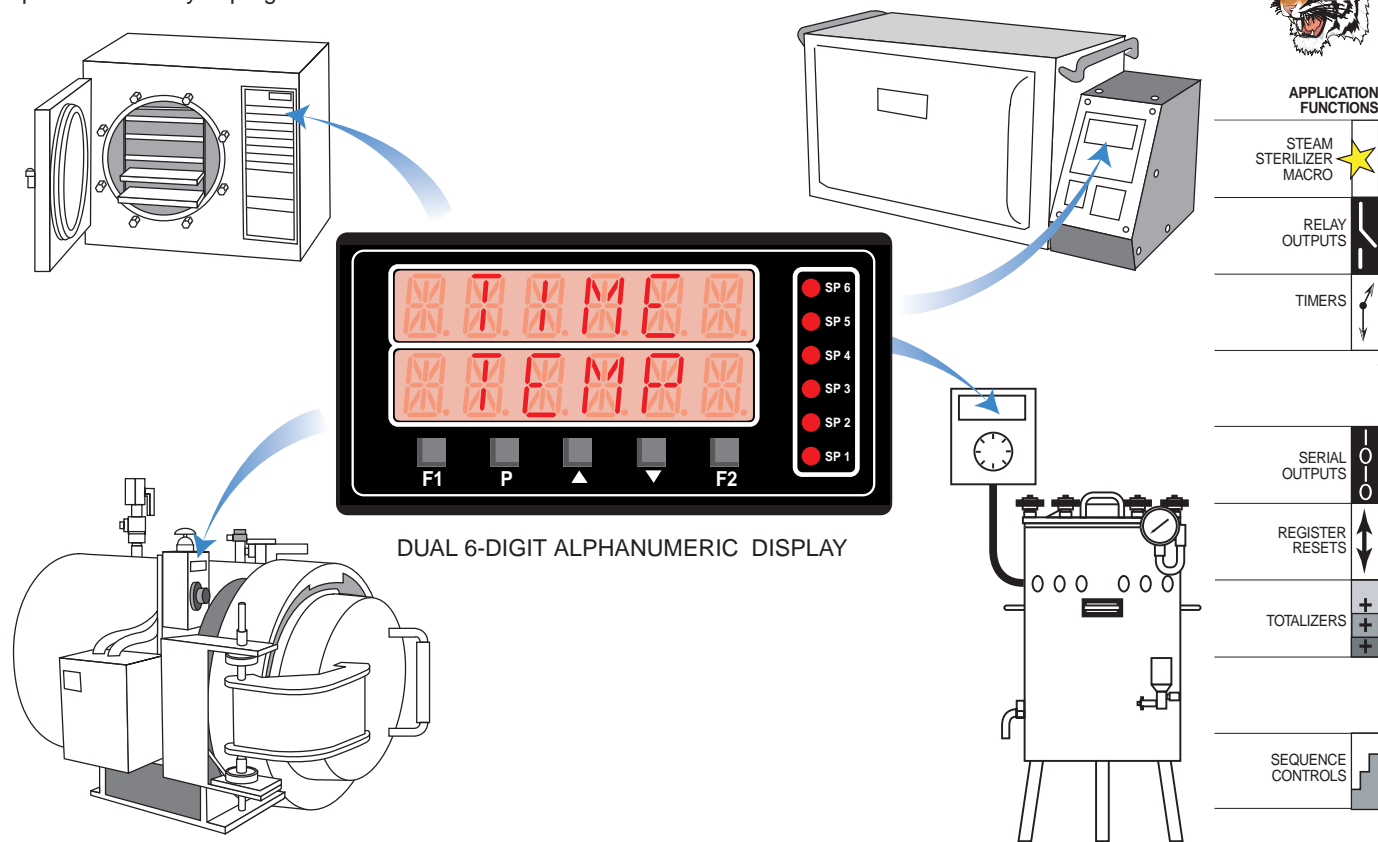
Texmate supply input modules to suit most standard and many special sensors. Sensors can be purchased from a supplier in your area.
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FREQUENCY
RPM, Pulse, Counter

The Texmate sterilizer controller has many new and unique features making it ideal for steam sterilizer / autoclave manufacturers and refurbishers to upgrade analog sterilizers to digital control. The controller contains all the built-in temperature control and timer functions for steam sterilizer operations in easy to program menus described below.

The dual alphanumeric display with a five-button IP65 polyester faceplate, fronting a 96x48 mm 1/8 DIN case, is the ideal operator interface for easy programming and displaying sterilizer menu messages.



DUAL 6-DIGIT ALPHANUMERIC DISPLAY

- Easy front panel configuration and control using instructive programming menu messages.
- Selectable "STERILIZE ONLY" or "STERILIZE AND DRY" cycles.
- Descriptive display messages showing temperature and time remaining during each cycle.
- Operator adjustable drying time for drying cycle with factory programmable minimum and maximum time limits.
- Operator selectable sterilization temperatures with factory programmable preset temperature limits.
- Operator adjustable sterilization time window for selected sterilization temperature. Factory programmable minimum and maximum sterilization time limits.
- Over / under-temperature shutdown with scrolling display fault indication: "OVER TEMPERATURE FAILURE" or "UNDER TEMPERATURE FAILURE".

- Over-temperature shutdown during drying cycle.
- Temperature warning scrolling display message: "WARNING CONTENTS ARE HOT" if the door is opened and the temperature is above the factory programmed value.
- Factory programmable independent PID control settings for both the sterilizing and drying cycles.
- RTD or thermocouple and status inputs.
- Relay outputs for heater / valve control.
- Optional direct serial printer output with optional print format including: date, job number for day, time related temperature and time for duration of sterilize cycle, and temperature fault indication on printout.
- Trend analysis using optional 4000 sample time stamped data logger.
- For multiple unit OEM manufacturers and refurbishers, the operating system is reconfigurable using Texmate's Development System software.

All factory programmable limits can be preset to your specifications.

TEXMATE CONTROLLERS FOR THIS APPLICATION	
Order Codes	Comments
DI-602AT5C-DR-PSI-.....	Steam Sterilizer Macro

Texmate supply input modules to suit most standard and many special sensors. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

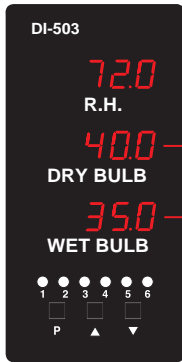
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Wet and dry bulb humidity measurement, using two temperature sensor probes, is perhaps the most reliable method of accurately calculating humidity for low temperature applications in industry today. Both sensors are mounted close together, with one designated the dry bulb sensor and the other the wet bulb sensor. The wet bulb is kept wet using a moistened cotton wick.

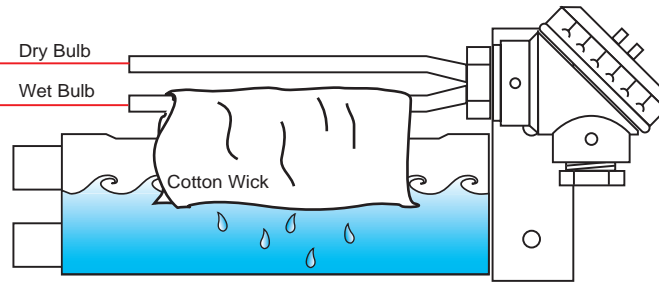
The wet bulb is cooled relative to the dry bulb by heat loss due to moisture evaporation from the wet bulb wick. The rate of evaporation is dependent on the ambient temperature and humidity.

From a polynomial formula entered into the controller, relative humidity (RH) is calculated from the dry and wet bulb temperatures.

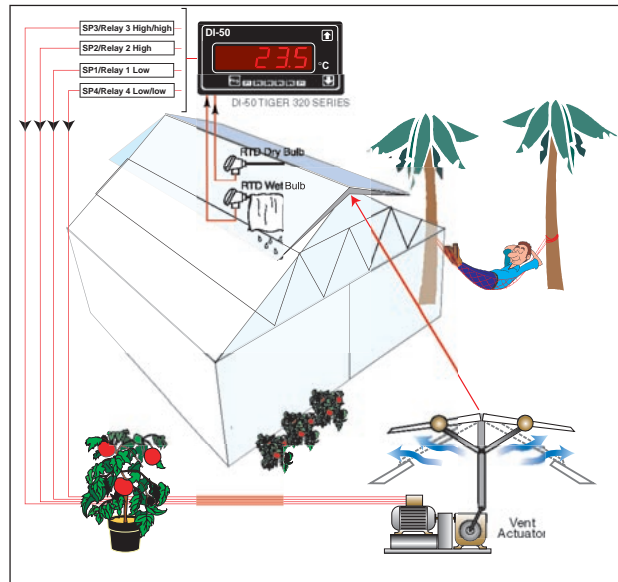
A Tiger 320 Series controller, with a dual RTD or thermocouple input module and our relative humidity macro installed, allows you to directly display RH and temperature. This data can be used to control the temperature and humidity applications in horticulture, livestock, food processing, environmental, timber drying, and many other industries.



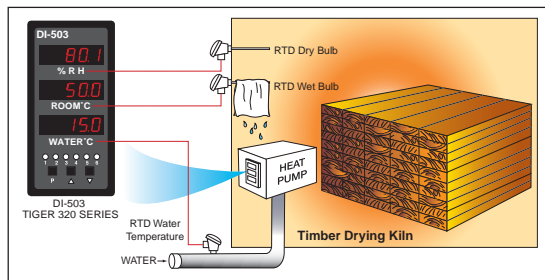
DI-503 TIGER 320 SERIES



APPLICATION FUNCTIONS	
RH MACRO	★
RELAY OUTPUTS	⏏
TIMERS	⏰
ANALOG OUTPUTS	📈
SERIAL OUTPUTS	📡
REGISTER RESETS	↕



CALCULATIONS	⚡
SEQUENCE CONTROLS	📅
TEXT MESSAGING	📧
INPUTS	
DUAL TEMPERATURE	★



TEXMATE CONTROLLERS FOR THIS APPLICATION

Basic Order Codes	Comments	List Price From:
DI-50T—DR—PSI—IDT2	Humidity macro.	US\$ 245.00
DI-503T—DR—PSI—IDT2	Humidity macro. Display all parameters.	US\$ 330.00
	Macro required. Charges vary depending on application. Contact Texmate.	

Prices are for listed components only and do not include configuration charges if applicable. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

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TEMPERATURE
T/C, RTD

In many industrial applications it is necessary to be able to control a device manually. Often a potentiometer or rotary switch is used, but this method can be too coarse and not easily repeatable. Texmate have developed a versatile and easy-to-use selection of manual stations, using their Tiger 320 Series controller, that produce an accurate, digitally controlled and scaled 4 to 20 mA or 0 to 10 V output.

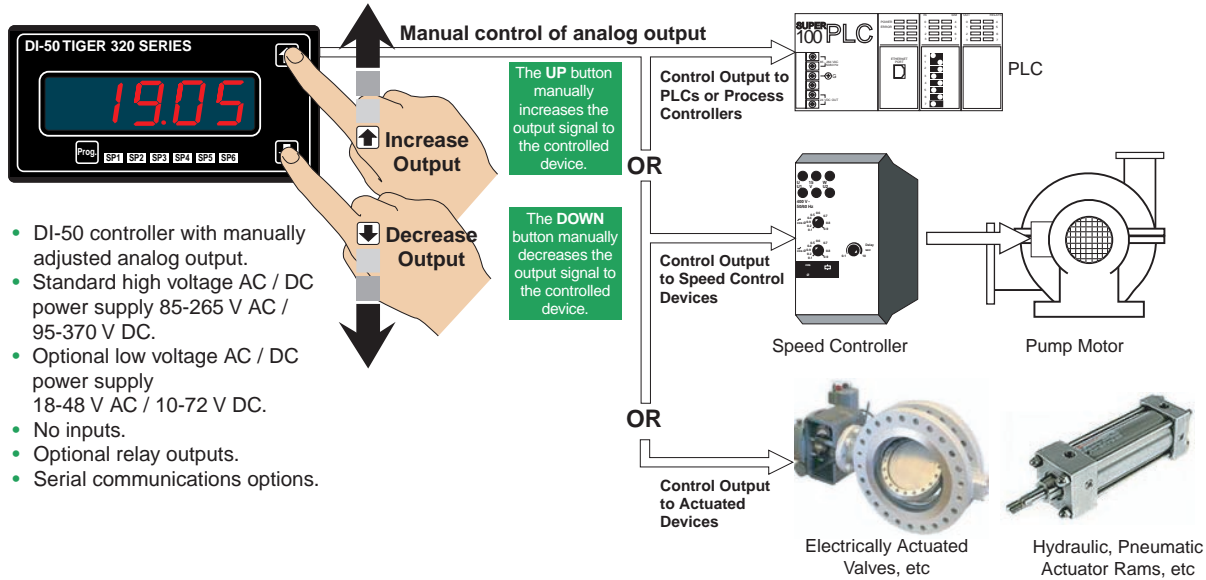
The digital value shown on the controller display is proportional to the scaled output and is adjusted directly through the front panel buttons to ensure precise and repeatable operation.

For Texmate's auto manual station, see Application Note 57 – Auto Manual Station.



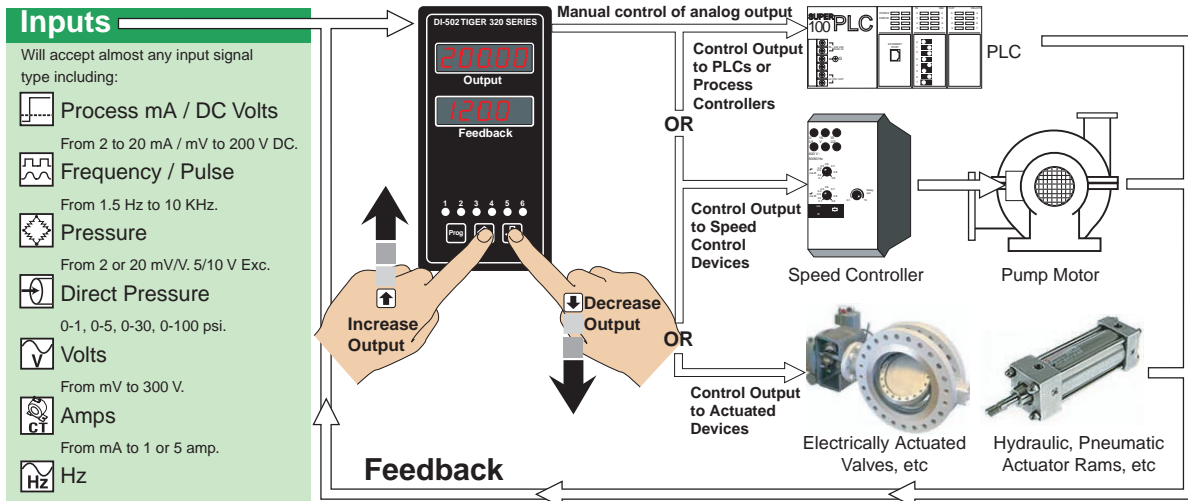
APPLICATION FUNCTIONS

Manual Station with Manually Controlled Analog Output



- DI-50 controller with manually adjusted analog output.
- Standard high voltage AC / DC power supply 85-265 V AC / 95-370 V DC.
- Optional low voltage AC / DC power supply 18-48 V AC / 10-72 V DC.
- No inputs.
- Optional relay outputs.
- Serial communications options.

Manual Station with Input Signal and Manually Controlled Analog Output



- The top display indicates the manually controlled analog output.
- The bottom display indicates feedback signal from the controlled device.
- Selectable Inputs with no output control from input signal.
- Standard high voltage AC / DC power supply 85-265 V AC / 95-370 V DC
- Optional low voltage AC / DC power supply 18-48 V AC / 10-72 V DC.
- Optional relay outputs.
- Serial communications options.

TEXMATE CONTROLLERS FOR THIS APPLICATION

Basic Order Codes	Comments	List Price From:
DI-50E—DR—PSI—000—IAC		US\$ 230.00
DI-502E—RR—PSI—XXX—IAC	Dual display. Output and feedback.	US\$ 310.00

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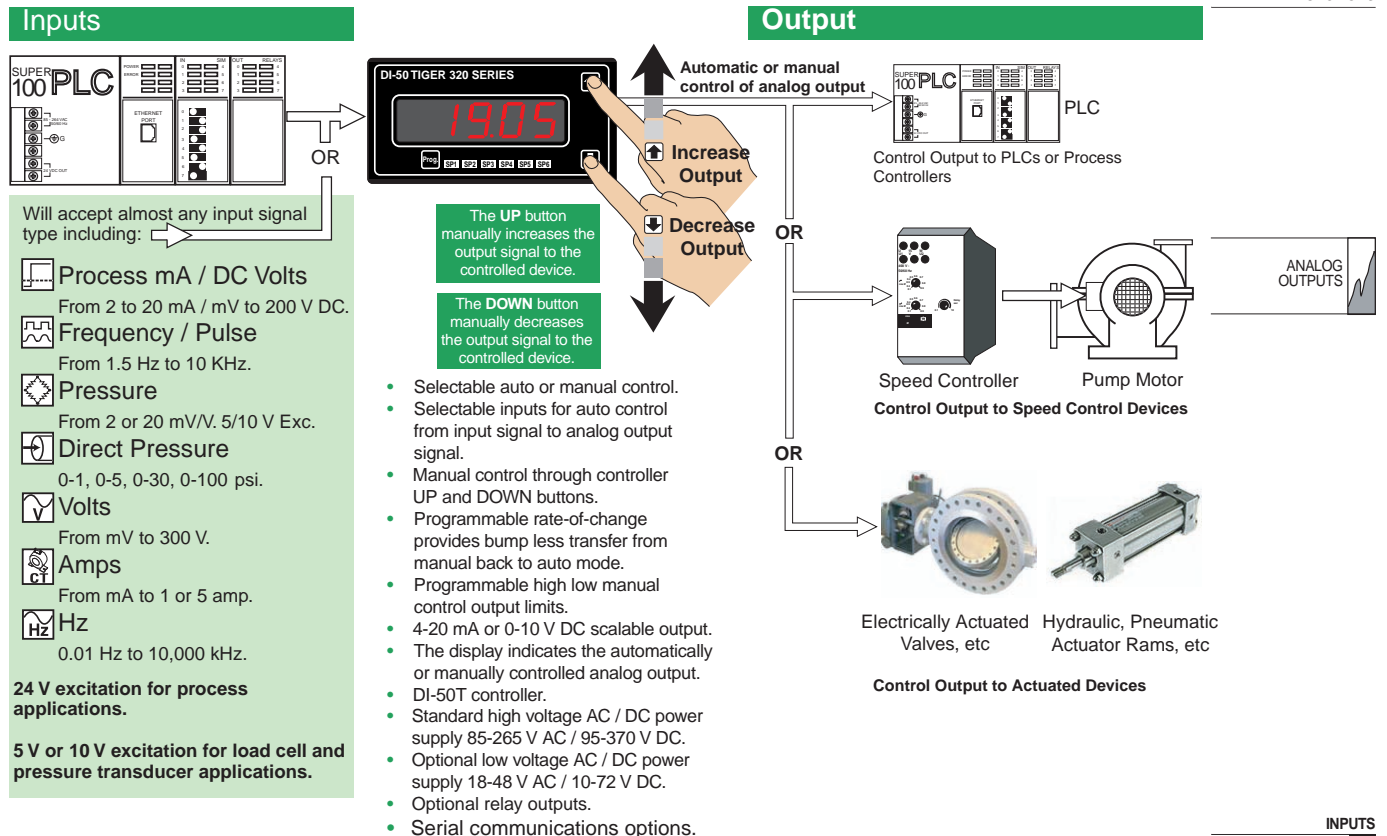
The digital value shown on the controller display is proportional to the scaled output and is adjusted directly through the front panel buttons to ensure precise and repeatable operation.

For details on Texmate's manual station, see Application Note 56 – Manual Station.



APPLICATION FUNCTIONS

Auto Manual Station with bump less Transfer



The auto manual station provides an automatic and manual analog control output to PLCs, process controllers, speed controllers, and actuated devices. Input to the station can be from a PLC or from almost any input sensor type.

The input signal automatically controls the analog output from the auto manual station to the controlled device in the auto mode. If the operator needs to manually control the analog output independently of the input signal, the station can be switched to the manual mode using

the front panel PROGRAM button. The auto manual station can then be returned to the auto mode when required by the operator. The control output will then ramp up or down at the programmed rate-of-change to provide bump less transfer between modes.

The rate-of-change is the transfer rate of the control output signal changing from the manual mode back to the automatic control output signal of the auto mode.

This is set by the operator as displayed counts per second by pressing the PROGRAM and DOWN button at the same time and entering the [rAtE] menu.

Manual mode control output signal high low limits can also be set.

INPUTS	
SPECIAL	★
PROCESS	4 / 20 mA 1 / 5 V
VOLTS	AC / DC
AMPS	AC / DC
WATTS	AC / DC
LOAD-CELL	PRESSURE
FREQUENCY	RPM, Pulse, Counter
TEMPERATURE	T/C, RTD
RESISTANCE	

TEXMATE CONTROLLERS FOR THIS APPLICATION		
Basic Order Codes	Comments	List Price From:
DI-50T—DR—PSI—XXX—IAC		US\$ 360.00

Prices are for listed components only and do not include configuration charges if applicable. Sensors can be purchased from a supplier in your area. Submit your "Request for information" together with your contact details.

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GPRS Technology gives Texmate the Edge with M2M Applications

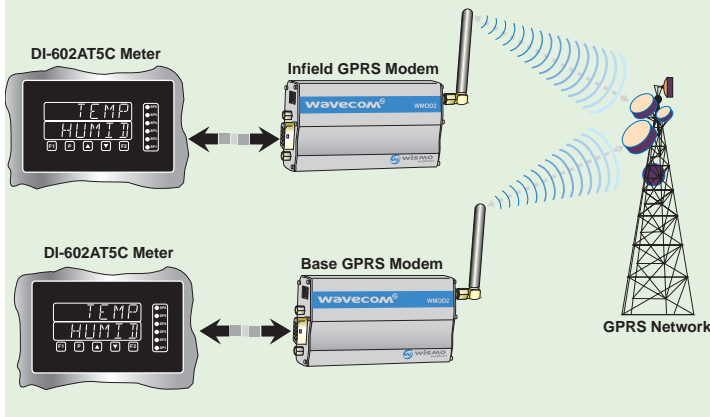
By using combinations of Texmate 380 Series controllers coupled to GPRS modems, Texmate brings a new dimension to packet data service solutions.

Using the existing GSM network, the GPRS modem and 380 Series controller can provide:

The flexibility of the Texmate 380 Series controller brings to reality many of the talked about machine to machine (M2M) applications

Infield to Base Mirroring

Have one controller in the field and a mirror of the controller at the base, or even in the lab. A great way to simulate in-the-field environments with no computers involved.



Wireless Data Logging

Have your data emailed directly to you – no more connecting cables and running download programs.

- Get infield application data to your mobile.
- Use your mobile to control your controller.
- Send application alarms to your mobile.
- Get SMS to your mobile.

Note:

Texmate does not recommend SMS for time critical alarm notification.

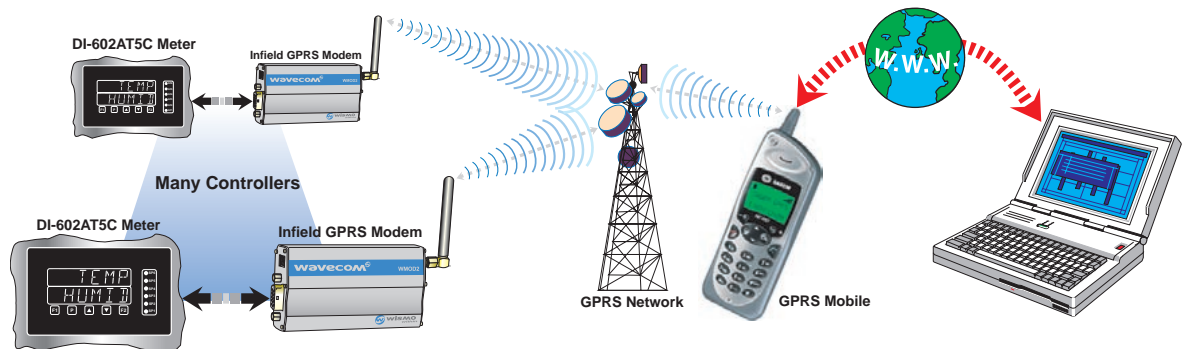


Internet Control of Your Machine

By using a real-time connection, your machine can be connected 24/7 for practically no cost.

Alter setpoints and control strategies in an instant from your desk.

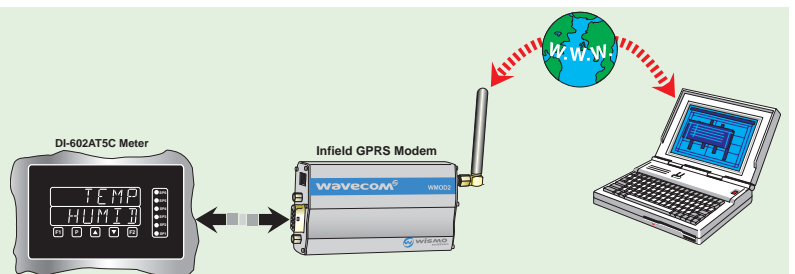
Get data from 100s of machines at the same time.



Remote Diagnostics

What if your sensor fails.

- Remote diagnostics of an infield application can inform you of this via automatic email.
- Data acquisition of infield applications can also be sent via automatic email.



AC Averaging
 AC True RMS
 AC Volts & Amps
 AC Watts & Watthours
 Ampere Hours
 Analog Meters
 ASCII Communications
 Battery Monitors
 Counters
 DC Volts & Amps
 DC Watts & Watthours
 Differential Pressure
 Differential Temperature
 Flow
 Frequency
 Infrared
 Level
 Line Speed & Tachometers
 Load Cells & Strain Gages
 Manual Loaders
 Mass Flow
 Motor Controllers
 Modbus Communications
 Percent Deviation
 PLC Interface Devices
 Preset Counters
 Preset Totalizers
 Pressure Meters
 Process Controllers
 Process Meters
 Position
 Power Meters
 Pumping System Control
 Ramp & Soak
 Rate & Speed
 Remote Displays
 RS-232/RS-485
 RTD
 Tank Volume
 Temperature Controllers
 Temperature Meters
 Thermocouple Meters
 Totalizers
 Transducers
 Transmitters
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 VAR Transducers
 Velocity
 Volume
 Weighing with Auto-Tare
 Wind Speed

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