



## Announcing our new middle name!

### Rel- *INNOVATION* -Tek

#### Well, maybe not - but it certainly fits.

*Tired of the same old products, same old tedious maintenance and the same old mediocre performance? Then log-on with the innovators! Our Clients always get the best. Rel-Tek never tires of innovation. Monitoring and control technology is always changing -- enabling new features, higher speed, greater safety, and -- believe it or not -- lower cost. Our Clients benefit from these new features, products, and ideas through Rel-Tek's tireless R&D efforts and profit reinvestment. A monitoring system isn't a static situation. We demonstrate our concern for users' changing needs every day, always striving for improvement. Client's suggestions are solicited and aggressively acted upon. An example occurred recently when a client called, suggesting that a "time-out" be added to a click-on test mode. It made sense to automatically switch back to normal operations, in the event the Client forgets. A change was made to our Millennia-DX software that same day, and a new disk was immediately available. All Rel-Tek Clients benefit from such innovations. And, such instant service is only possible because Rel-Tek manages the design of every part of its systems. Competitors offering third party software have no way of providing this valuable custom service.*

**Remote Workstations** – Network any number of remote PCs over your existing LAN. Each remote workstation has its own set of displays, logging parameters and control commands to customize to suit the remote user's interests.

Remotes access the common database at the main monitoring system computer (i.e. server) and can network off-site, indeed to wherever your LAN or WAN extends, using hard wire, phone, Internet or satellite links.



Each workstation has Windows-2000 or NT running Rel-Tek's own Millennia-DX ver-5.2 code. Ethernet communications update each remote machine every few seconds, this innovation is essentially transparent with regard to other LAN traffic. You no longer need to hike down to the computer room and haggle with others for computer access. Just set up your own workstation and get the data you need fast! Logging, printout, graphics and controls are standard utilities.

#### **Automatic Sensor Calibration** – Monthly



sensor calibration can eat up your maintenance budget -- a diversion and cost that can now be eliminated. Rel-Tek has pioneered in the development of MagiKal/DX automatic calibration equipment that can accurately and economically calibrate up

to 32 sensors at a clip. Safety benefits accrue due to the vastly improved calibration accuracy and schedule dependability, while avoiding citations and fines. Savings in labor alone can pay for automatic calibration, usually in less than a year's time. A mix of sensor types

(commonly CO, CH<sub>4</sub>, O<sub>2</sub> and CO<sub>2</sub>) within a 200 ft radius can be connected to one MagiKal/DX panel. Human calibration variances are eliminated, while 12-bit digitizing errors are an incredibly low .024%. Just enter the calibration schedule and data in the computer; the rest is automatic. If a sensor problem is detected, the calibration report flags the unit for further service. A smaller MagiKal/DX panel, dubbed the UnitKal/DX, can be used to service single, isolated sensors



along a belt line or in a gob area, one panel for each sensor. Another important benefit of auto-calibration is that **sensor cell life is essentially doubled!** This is attributable to the computer re-

scaling of each sensor, thus offsetting the normal range shrinkage as sensors age.

**Competitors claim to offer “automatic calibration,” but beware... this may not be automatic. You still have to visit the sensor, apply gas, time the calibration process, and - [here comes their automatic part!] -- wave a magnet to set the value. When we say “automatic,” you don’t even have to think about calibration... it’s truly automatic.** A US patent application was filed covering Rel-Tek’s innovative auto-calibration technology.



**Expanded I/O Capabilities** – All models of I/O cards have been reengineered to communicate six times faster than before. Designated with a “-C” suffix,

the previous 19.2K-baud maximum has been upgraded to a blazing 115.2K-baud. High communication speed is important, assuring rapid data updates for even very large systems. Communication drivers and splitter cards have also been upgraded, and optical isolation is standard. Lightning protection has been added to every field I/O card, saving on burnout.

Control outputs are upgraded from the previous TTL circuitry to more versatile SPDT relays with robust 120VAC/5A contacts. The new DX0020 analog output card joins our innovated stable of I/O products for controlling up to two 4-20ma analog devices, e.g. fans and motors. Software for PID loop control strategy provides fast feedback control with minimum overshoot.

**Optical Fiber Links** – DX-LINK/FO telemetry cards have been developed for linking to fiber cables, thus eliminating any conductive communication coupling between underground equipment and the outside world. Fiber cable lengths can be up to 1000 meters.



**Automatic Printout Scheduling** – Printing out daily or weekly reports and graphs is a gnawing bother that consumes management time, and is easy to put off and forget.

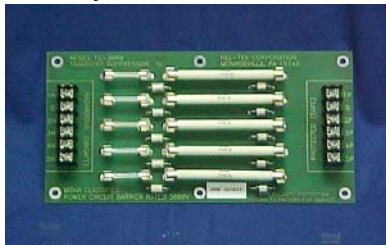
Eliminate this cost and worry by simply selecting the print times and report formats – all in advance. Your up-to-date reports are automatically printed on schedule, awaiting your review. Check them over, make a copy or two, pass them to your colleagues and stick one in the file for future reference. Your life got a bit easier, and you’re looking good.

**Belt Scale Interfacing** – Underground belt scales produce pulses whenever a unit mass of product passes, usually one pulse per ton. To integrate your belt scales into the monitoring system, Rel-Tek developed its innovative DX0100/BS card, which counts pulses and transmits the



count to the computer. The Millennia-DX software calculates accumulated tonnage and rate, and subsequently treats these production parameters like any other analog data. You can configure video screens to display the rate and tonnage, generate graphs and bar charts, archive data to hard drive with date/time stamp, etc. Logged data can even be exported to Excel using a standard CSV format. Resetting the buffer is as easy as a mouse click, behind password, of course. Rel-Tek can also supply belt scales if needed.

**Direct Monitoring to 3000V** – Rel-Tek was recently issued an MSHA evaluation for its



new TS-3000 power circuit barrier (PCB), replacing the aging TS-100 unit. Use of the TS-3000

enables accessing electrical V/I sensors inside control boxes where voltage exposure can be as high as 3000V. Comparing this with the old 600V limit, this is a 5x enhancement in direct monitoring latitude -- important to mine operators because much of the newer mining machinery is powered from 1000V or more. Existing Rel-Tek monitoring systems can be upgraded to the new innovative 3000V rating simply by replacing TS-100s with dimensionally compatible TS-3000 units.

**New Single Card PLC** – Because it mimics the performance and features of a full blown PLC system, but without the high cost... we dubbed this the “PLC/Express.” It has eight analog



inputs, eight digital inputs, four relay outputs and one analog output. Its on-board control logic is programmed by downloading from a PC or laptop using Rel-Tek’s “Virtual Wiring” graphic logic software. The PLC/Express can operate

as a stand-alone PLC, or it can be monitored by simply connecting to a Millennia-DX communication bus, along with the rest of your

other outstation cards. The unit is powered by 24VDC, drawing less than 300ma. Analog inputs are generic 4-20ma, 12-bit resolution. Digital inputs are dry contacts. Digital outputs are SPDT, 30VDC/1A relays. The single analog output is 4-20ma, 8-bit resolution. The “PLC/Express has a 2-line x 16-character backlit LCD for local display of status and alarm conditions. It measures 5”x8”.

**Cell Life Extender Module** – The “CLEM” is a new device that attaches to a GasBoss\*100 methane sensor to extend the life of the catalytic pellister sensing element by many years. This important enhancement is now included with all new production units, and can be retrofitted on older units. The CLEM has both MSHA (IA-2G) and UL-913 (Class I, Div 1) approval coverage for hazardous methane areas. Rel-Tek’s intrinsic safety barriers (Types SG, SH and SL) are available for optimal matching of sensor parameters and approvals.

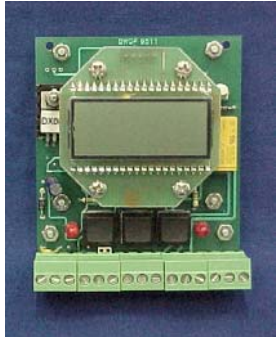
**Air Velocity Re-design** – The AirBoss\*200W now contains intelligent electronics, providing greater accuracy and stability, especially in the critical low end of the 0-2000 fpm range where competitor’s sensors are known to drop out. The 4-20ma output is derived from a 12-bit D/A converter, giving smooth output continuity. A multiplier can be



downloaded to compensate for the plug-flow profile across the flow path, permitting installation of units at edges, out of harms way, while outputting an average plug flow value. A reverse flow sensing version is available (-R suffix) which monitors over a bi-directional range of -2000 fpm through +2000 fpm, where zero fpm is at midscale (12ma). The -R version is an important innovation, as it responds to plus/minus flow direction, which can be critical to the safety of underground workers. Other air velocity sensors display upscale outputs regardless of the flow direction, an unsafe situation if a fan has failed, or if a

rockfall or flooding has blocked a fresh air delivery tunnel. More than one mine explosion could have been avoided, had reverse reading flow sensors been in use.

**New Intelligent Relay Module** – The new digital RM-420i relay module replaces a previous analog version, providing accurate 12-bit resolution and extreme stability. This enables precise threshold crossing control executions (to +/- .0244% FS), while



providing equally accurate hysteresis settings. Program by simple up/down menu scrolling using push buttons. The innovative RM420i is used in the RMcalibar controller unit for stand-alone monitoring of up to eight analog sensors, one RM-420i module per sensor. The RMcalibar panel has a built in power supply, backup battery and A/V alarms, and is now approved to UL-508 as industrial control equipment

**MSHA and UL approvals** – Always striving to enhance safety and performance, Rel-Tek has recently added a flock of new approval actions



to its portfolio. They include the TS-3000 (3000V rated) power circuit barrier, a redesign of the SG, SH and SL intrinsic safety barriers, the CLEM device, a new HotBoss\*100 temperature sensor (now with 100% digital circuitry), a redesigned OxyBoss\*100 oxygen sensor, and DXcalibar and RMcalibar panels; others are still in process. But where do UL approvals fit in? Interestingly, aboveground applications benefit from the same technologies, which Rel-Tek develops for mining, hence the need for duplicate MSHA and UL approvals in many cases. Each approval represents a financial investment for the future. Rel-Tek's approval actions now total about 125... Whew!

**Extended 2-year Warranty** -- Virtually unheard of in the mining industry, Rel-Tek has inaugurated a unique **two-year warranty**.



Made possible by historically low failure rates, this long-term coverage reflects our confidence in the exceptional quality and performance of our products. The 2-yr warranty extends to the normal usage of sensor cells, usually excluded by others. Documented MTBF (average life) statistics for Rel-Tek's FireBoss (CO) and GasBoss (CH<sub>4</sub>) sensors is measured in decades.

Rel-Tek's motto: **Ahead... Way Ahead.** It takes a lot of **innovation** to stay ahead. And we love it.



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