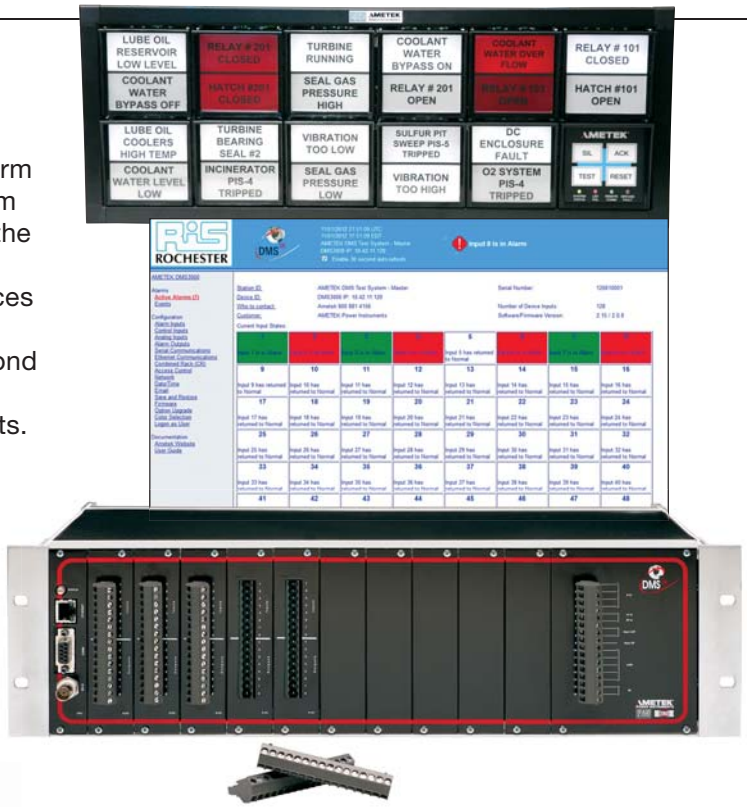
DMS^{3K}

ANNUNCIATOR AND SEQUENCE OF EVENTS RECORDER

ALARM MANAGEMENT SYSTEM

The AMETEK DMS^{3K} is a flexible, remote alarm management system. It captures alarms from digital or analog inputs, displays alarms on the built-in web server and provides outputs to remote annunciator displays and other devices using serial and Ethernet communications. Alarms can be time stamped to the millisecond for sequential events recording and email notification can be provided for critical events.



Modular, Flexible Alarm System

The DMS^{3K} Alarm Management System consists of a 19" card rack with card slots for I/O modules, CPU and power supply. Each card rack accepts a maximum of 128 inputs and provides up to 240 outputs. Multiple I/O card racks can be interconnected for larger systems.

Multiple card racks are connected together via Ethernet and can be located anywhere you have a LAN connection making it ideal for distributed applications. Or they can just be interconnected together, creating their own private LAN.

Inputs

Inputs can be digital contacts or analog signals from field sensors. Each I/O card rack can accept up to 128 digital inputs (wet or dry field contacts), 32 analog inputs (4-20 mA) or combinations of both. Up to 4 trip settings can be configured per analog input for triggering an annunciator window or alarm output.

Outputs

Each I/O card rack provides up to 240 digital (solid state) or relay outputs for driving an annunciator lamp, repeat relay, alarm horn, or common alarm output.

Combined Systems

When the number of inputs exceeds the card rack capacity of 128, multiple I/O card racks are used. These racks can be networked together locally or remotely via the Ethernet port to form one consolidated alarm management system. One rack becomes a 'Master' with all alarms transmitted from up to 16 'Slave' racks. The 'Master' rack can provide one common system-wide communication output for retransmitting alarms via Modbus and DNP, or one common web browser page to view alarms throughout the system.

I/O Grouping

A single input or group of inputs can be configured to drive any output. This can be done by using or/and Boolean logic or voting functions where a certain number of inputs need to be in alarm (2 out of 3, 3 out of 5, etc) to activate the output.

AMETEK®
POWER INSTRUMENTS

EXPERIENCE THE POWER™

Annunciator Functions

The DMS3K can be used to drive remote annunciator displays via lamp outputs or through serial and Ethernet communications. The system can be configured with up to 12 ISA Operational Sequences that control annunciator windows and horn outputs.

Sequence of Events Recording

All inputs are time stamped to the millisecond and logged in non-volatile memory with the capacity to store 40,000 events. Time synchronization is provided via IRIG-B and NTP time formats.

Communications

The DMS3K comes with Ethernet and RS-232/485 Serial ports for retransmitting the alarm status using Modbus, DNP and ASCII protocols. The protocols provide both alarm status and time stamped sequence of events data.

Email notification

The DMS3K can trigger an email from a single alarm or group of alarms. Up to three email recipients can be configured; each with their own list of alarms to trigger the email. Emails will include the input number, alarm description and time and date of the alarm.

Remote Annunciator Applications

The DMS3K can be used for applications where digital and analog alarm inputs are in one location and the annunciator display is in another. The annunciator display can connect to the I/O card rack using a point to point cable or serial/Ethernet communications. Several inputs can be combined to annunciate a single window.

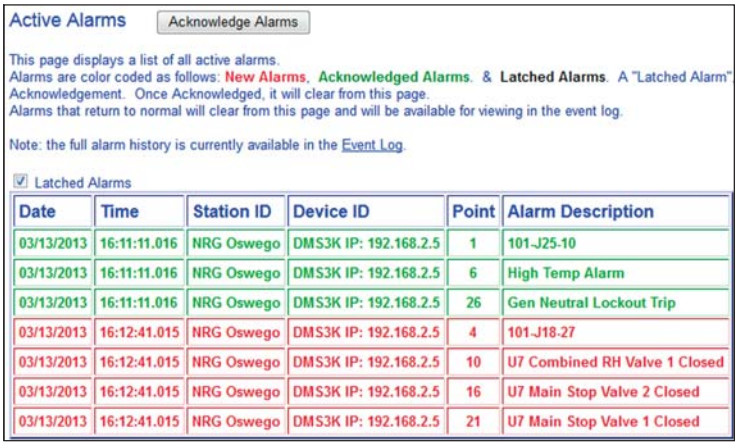
Combined Annunciator/SER Application

In this cost-saving application, the DMS3K can provide an alarm annunciator display and sequence of events recording from the same input, saving on equipment and wiring.

Display Alarms on a HMI

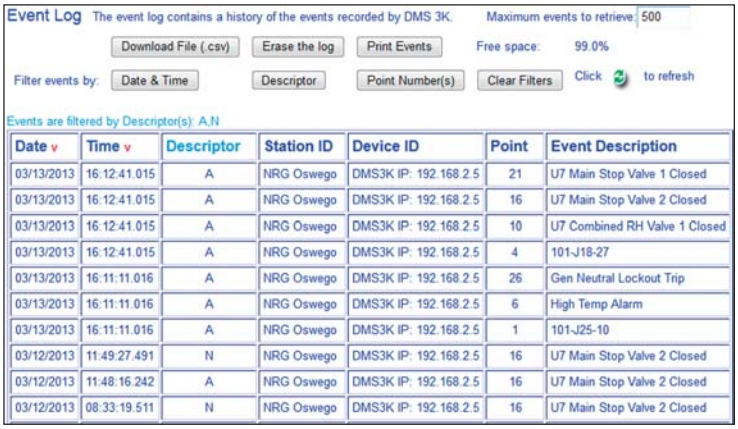
DMS3K alarms can be shown on a flat screen display with touch screen controls if desired. The flat screen display can be located anywhere by simply plugging it into a LAN connection.

Home page — Alarm graphic view



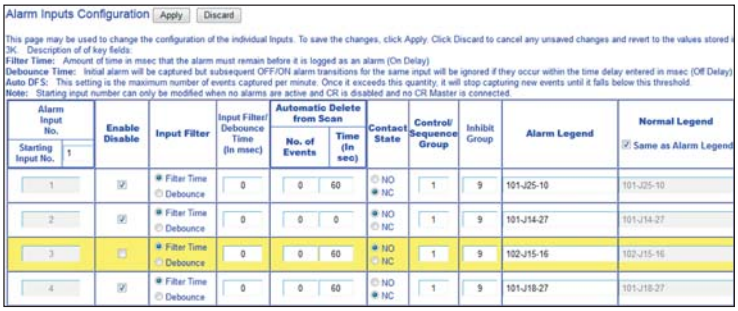
Date	Time	Station ID	Device ID	Point	Alarm Description
03/13/2013	16:11:11.016	NRG Oswego	DMS3K IP: 192.168.2.5	1	101-J25-10
03/13/2013	16:11:11.016	NRG Oswego	DMS3K IP: 192.168.2.5	6	High Temp Alarm
03/13/2013	16:11:11.016	NRG Oswego	DMS3K IP: 192.168.2.5	26	Gen Neutral Lockout Trip
03/13/2013	16:12:41.015	NRG Oswego	DMS3K IP: 192.168.2.5	4	101-J18-27
03/13/2013	16:12:41.015	NRG Oswego	DMS3K IP: 192.168.2.5	10	U7 Combined RH Valve 1 Closed
03/13/2013	16:12:41.015	NRG Oswego	DMS3K IP: 192.168.2.5	16	U7 Main Stop Valve 2 Closed
03/13/2013	16:12:41.015	NRG Oswego	DMS3K IP: 192.168.2.5	21	U7 Main Stop Valve 1 Closed

Active alarm view



Date	Time	Descriptor	Station ID	Device ID	Point	Event Description
03/13/2013	16:12:41.015	A	NRG Oswego	DMS3K IP: 192.168.2.5	21	U7 Main Stop Valve 1 Closed
03/13/2013	16:12:41.015	A	NRG Oswego	DMS3K IP: 192.168.2.5	16	U7 Main Stop Valve 2 Closed
03/13/2013	16:12:41.015	A	NRG Oswego	DMS3K IP: 192.168.2.5	10	U7 Combined RH Valve 1 Closed
03/13/2013	16:12:41.015	A	NRG Oswego	DMS3K IP: 192.168.2.5	4	101-J18-27
03/13/2013	16:11:11.016	A	NRG Oswego	DMS3K IP: 192.168.2.5	26	Gen Neutral Lockout Trip
03/13/2013	16:11:11.016	A	NRG Oswego	DMS3K IP: 192.168.2.5	6	High Temp Alarm
03/13/2013	16:11:11.016	A	NRG Oswego	DMS3K IP: 192.168.2.5	1	101-J25-10
03/12/2013	11:49:27.491	N	NRG Oswego	DMS3K IP: 192.168.2.5	16	U7 Main Stop Valve 2 Closed
03/12/2013	11:48:16.242	A	NRG Oswego	DMS3K IP: 192.168.2.5	16	U7 Main Stop Valve 2 Closed
03/12/2013	08:33:19.511	N	NRG Oswego	DMS3K IP: 192.168.2.5	16	U7 Main Stop Valve 2 Closed

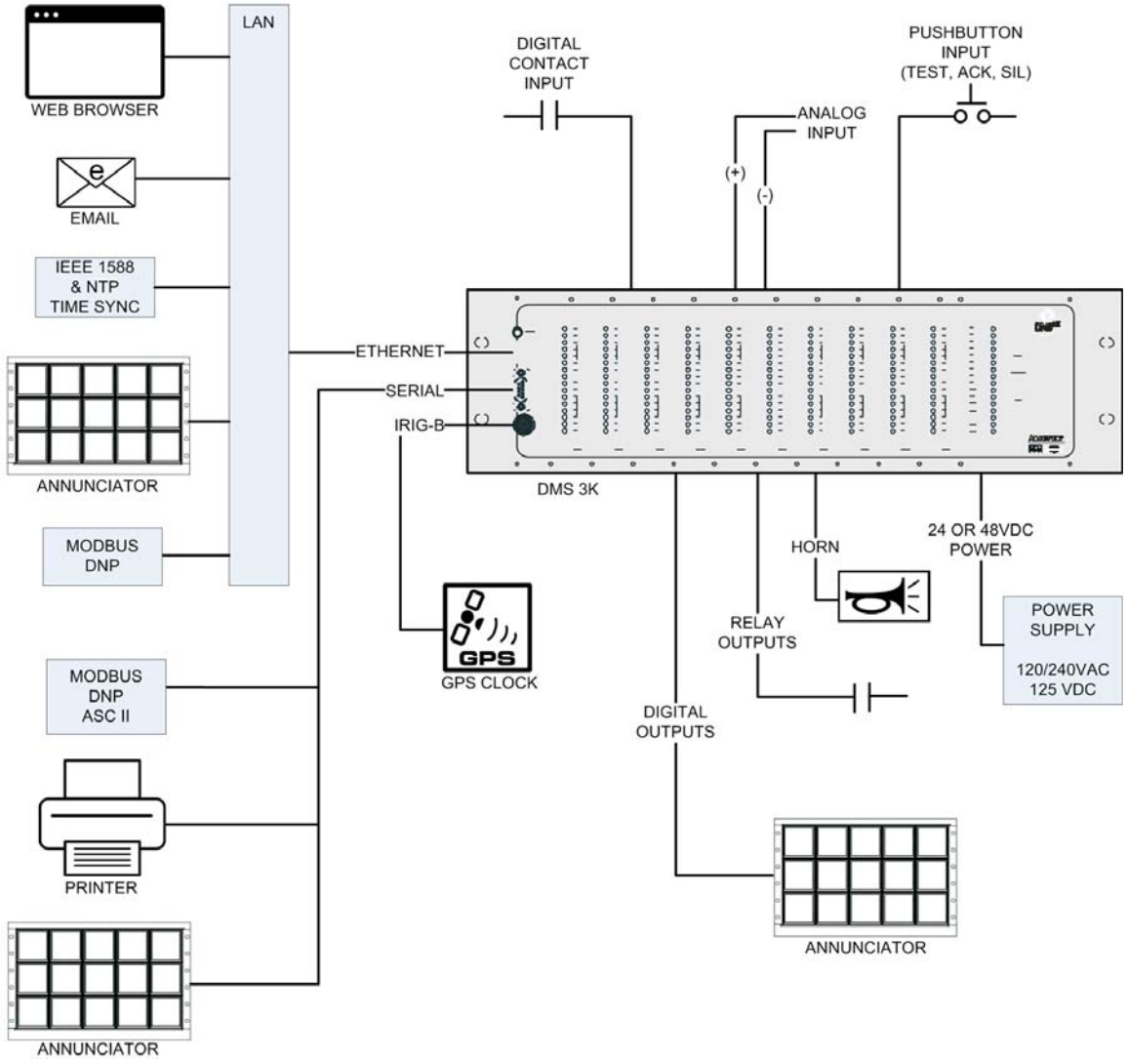
Historical event log



Alarm Input No. (Starting Input No. 1)	Enable Disable	Input Filter	Input Filter/ Debounce Time (In msec)	Automatic Delete from Scan: No. of Events	Automatic Delete from Scan: Time (In sec)	Contact State	Control/ Sequence Group	Inhibit Group	Alarm Legend	Normal Legend (Same as Alarm Legend)
1	☑	Filter Time	0	0	60	NC	1	9	101-J25-10	101-J25-10
2	☑	Filter Time	0	0	0	NO	1	9	101-J14-27	101-J14-27
3	☐	Filter Time	0	0	60	NO	1	9	102-J15-16	102-J15-16
4	☑	Filter Time	0	0	60	NC	1	9	101-J18-27	101-J18-27

Sample configuration screen

DMS^{3K} SYSTEM ARCHITECTURE



Upgrade Existing Alarm Management Systems
The DMS^{3K} has the flexibility and functionality to replace your existing alarm management systems. Legacy AMETEK Annunciators (MPAS-90, DMS-2000 and DMS-3000) can be easily upgraded by simply replacing legacy CPUs with the new DMS^{3K} version. The new CPU is compatible with existing card racks and their I/O. Other alarm management systems can also be upgraded with the flexible multi-function DMS^{3K}.

SPECIFICATIONS

SYSTEM CAPACITY

16 I/O Card Racks per system
- 2,048 digital inputs
- 512 analogs
- Combination of both
- 3,584 outputs per remote unit
- 640,000 events in non-volatile memory

I/O Card Rack Capacity
- 128 digital inputs or 32 analog
- Combination of analog and digital
- 240 outputs per remote unit
- 3U card rack has 10 I/O card slots
- 6U card rack has 23 I/O card slots
- 40,000 SER events stored in non-volatile memory

INPUTS

Digital Inputs
- N.O. or N.C., field contact selectable via browser config or DIP switches
- Wet or dry field contacts

Input Current
- Approximately 2 mA per input

Field Contact Voltage
- 24 VDC nominal
- 48 VDC nominal
- 125 VDC nominal

Analog Inputs
- 4-20 mA and 1-5 VDC

Input Loop Resistance
- N.O. 200K ohm minimum
- N.C. 1K ohm maximum

Time Stamp Resolution
- 1 ms between alarms

Input Response
- Digital input: 16 ms
- Analog input: 40 ms

TIME SYNCHRONIZATION

IRIG-B
- Modulated or demodulated
- 10K input impedance
- ±1 ms accuracy

NTP
- 1-3 NTP servers
- Up to 1 ms accuracy

Internal Crystal
- 0.5 sec/day accuracy

OUTPUTS

Lamp Drive
- 200 mA @ 24 VDC, 5 watts

Power Relays
- S.P.D.T contact rating
- 24 VDC 2.0 amp resistive
- 240 VAC 1.0 amp resistive

Reed Relays
- S.P.S.T. contact rating

100 VDC 0.25 amp maximum resistive

I/O MODULES

8 I/O	8 DI, 8 DO
16 I	16 DI
8 IAM	8 AI
16 O	16 DO
IR	4 DI, 6 RO
8 RR	8 RRO
16 RR	16 RRO
5 PR	5 RO
8 PR	8 RO

DI=Digital Input, DO=Digital Output
AI=Analog Input, RO=Relay Output
RRO=Reed Relay Output

COMMUNICATIONS

Serial Port
- RS-232/485 selectable

Protocols
- Modbus RTU, DNP 3.0, serial ASCII

Ethernet Port 10/100
- DHCP or Fixed IP
- Multi-user support

Protocols
- Modbus TCP/IP, DNP 3.0, BACNET

WEB Server
- Used for configuration of unit
- Graphical and text display of alarms
- Can combine up to 16 units on a single WEB browser
- Acknowledgement of alarms
- Separate screens for active alarms and archived event log
- Email notification
- Export to CSV
- Printing of alarms (auto/manual)
- Multiple levels of security: HTTPS and encrypted username/password

OPERATING VOLTAGES

Prime Power
Internal supply in rack
- 24 and 48 VDC ±12.5%

External power supply
- 125 VDC ±15%
- 120/240 VAC 50/60 Hz ±15%

Field Contact Voltage
Internally supplied
- 24 VDC ±12.5%

Externally supplied
- 24, 48, 125 VDC ±12.5%

MECHANICAL

19" I/O Card Rack
- 3U single chassis, 10 card slots 5.5" H x 7.25" D x 19.0" W
- 6U dual chassis, 23 card slots 11.5" H x 7.25" D x 19.0" W

Mounting
- Terminals on front or rear of rack

Terminals
- Combined edge connector with terminal block – up to 1.5 sq. mm

EMC COMPLIANCE

Surge Withstand (Oscillatory and Impulse)
- C37.90.1, IEC61000-6-2

EFT Burst Immunity
- IEC61000-6-2

RFI Immunity
- IEC61326-1

ESD
- IEC61000-6-2

RFI Emissions
- IEC61000-6-3

ENVIRONMENTAL

Operating Temperature
- 32° to 140°F (0° to 60°C)

Storage Temperature
- -13° to 185°F (-25° to 85°C)

Humidity
- 0 non-condensing to 90%

CERTIFICATIONS
CE (pending)

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