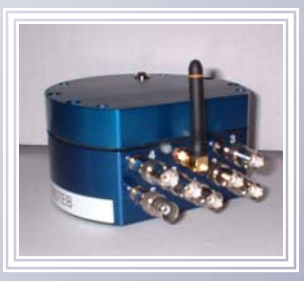
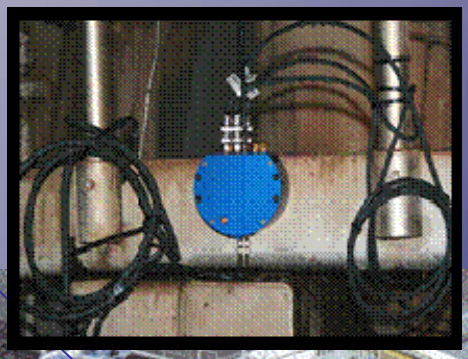
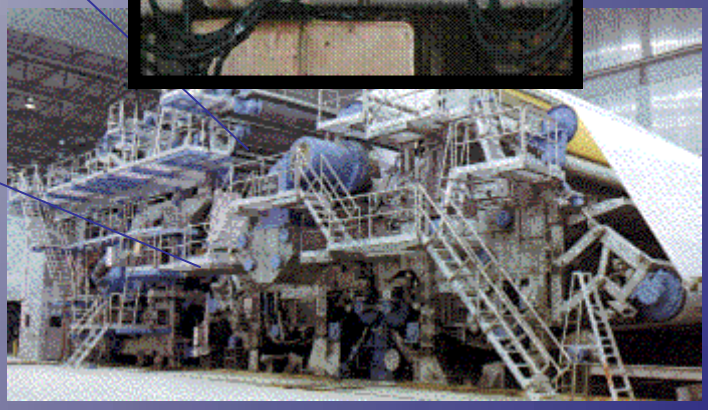
WIRELESS ASSET MONITORING

WITH ANALYSIS AND DYNAMIC DATA TRANSLATOR SOFTWARE







WAM-661
WAM-761
WAM-56U

Rev. 2.11

WAM

WIRELESS ASSET MONITORING SYSTEM

OVERVIEW:
Spectrum Instruments Ltd's **WAM** product line is an advanced wireless asset monitoring system that supports a wide variety of analog inputs capable of 1 - 56 vibration channels of continuously acquired analog data containing frequencies from DC up to 120 KHz as well as J type & K type thermocouples and a tachometer. A remote wireless receiver directs raw machine data to monitoring or archiving or analysis software.

Spectrum Instruments Ltd's family of **WAM** products is an advanced wireless monitoring system that supports a wide variety of analog inputs – inputs that are usually associated machinery condition. **WAM's** robust packaging allows the unit to be used in most plant environments to perform one of the following functions:

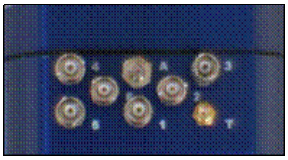
- As a permanently mounted solution for long term condition trending, **WAM** compliments existing condition monitoring programs by providing a higher level of monitoring capability for critical or complex machinery
- As a trouble shooting solution, WAM's field modules can be moved from one machine to another providing additional data as machine faults arise; transient data crucial to proper machine condition diagnostics can be easily missed by traditional monitoring and walk-around predictive maintenance methods

TYPICAL APPLICATIONS

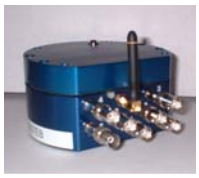
PAPER MACHINE ROLLS	**COMPRESSORS**	**CRANES**
CRITICAL BLOWERS	**CRITICAL PUMPS**	**CRITICAL MOTORS**
MOBILE EQUIPMENT	**DRAG LINES**	**VARIABLE SPEED EQUIP**

Awkward or hazardous machine applications of any kind

INPUTS – Depending on the Model selected, the **WAM** field module is capable of 1 to 56 vibration channels of continuously acquired dynamic analog data containing frequencies from DC to 120 Khz. Low resolution sensors such as cold junction thermocouples are amplified with an internal temperature compensation board supporting both J and K type thermocouples. For vibration configured channels, a standard 20V/4ma current is provided for biasing accelerometers. This bias voltage can be disabled to allow direct AC inputs from other devices such as proximity probes.



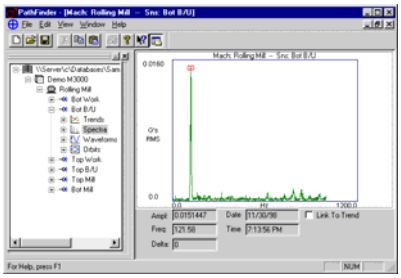
COMMUNICATION - Spectrum Instruments' **WAM** wireless asset monitoring system communicates back to a common base receiver via a long range spread-spectrum 900 MHz radio. An optional WLAN communication (802.11B or 802.11G) is available for higher speed, short range applications. Ethernet communication is supported on the **WAM-56U**.

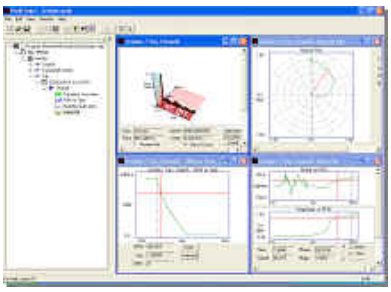


DATA MANAGEMENT – Data that is continually gathered by the **WAM** Wireless Asset Monitoring System is wirelessly transferred to, and managed by field proven **Pathfinder Software Suite** software**.** The **Pathfinder** software resides in the customer's Maintenance Department PC .

Pathfinder Software Suite includes:

- **Online Operator Monitor**
- **DB Editor**
- **DB Convert**
- **Pathfinder Analysis Software**
- **SmaartMonitor**
- **Smaart Transient**
- **Smaart Balance**





Pathfinder software receives and manages incoming data from a single, or in the case of a large facility, multiple **Spectrum WAM** modules. Depending on the configuration, Pathfinder performs an open-architecture archiving function and either:

- Stores raw sensor data that can be transferred to any exiting PdM software via any brand name portable vibration data collector, or
- independently generates bar graphs displays, and provides advanced analytical tools with operator windows for FFTs, waterfalls, orbits, trends, real time waveforms as well as Bode and Nyquist plots.

RBMware, Prism, Odyssey and more

Resolving Data Base Continuity Issues – Spectrum's optional **'Translator'** software allows vibration data captured by our **WAM** field module and stored in the Pathfinder Software Suite to be transferred to **ANY** brand name data collector for downloading/archiving into a plants existing vibration based PM software program. This allows the customer to analyze machine data captured by Spectrum's **WAM** system with his own PM software that he is familiar with (no new software training required) while at the same time, embedding new dynamic data that supplements existing historical data for improved condition trending.

KEY FEATURES

- SMALL FOOTPRINT
- MODULAR
- EXPANDABLE
- IP 67 WATER AND WEATHERPROOF RATED
- ACCEPTS VIBRATION SENSOR INPUTS, TEMPERATURE INPUTS, ANALOG INPUTS
- 900 Mhz, 802.11 AND ETHERNET CONNECTIVITY
- ONBOARD SIGNAL CONDITIONING
- OPTIONAL 'TRANSLATOR' SOFTWARE SUPPORTS DOWNLOAD OF ARCHIVED DATA INTO A CUSTOMER'S EXISITNG PdM SOFTWARE (Entek Odyssey, CSI RBMware, SKF Prism etc)

SPECIFICATIONS

	WAM-661	WAM-761	WAM-56U
INPUT CAPACITY			
VIBRATION CH.(MAX)	6	7	56
PROCESS CH. (MAX) (T/C'S, V, I, STRAIN + MORE)	6	6	56
TACH CHANNELS	1	1	1
WIRELESS COMMUNICATION			
RADIO FREQUENCY	900 MHz ISM	900 MHz ISM AND 802.11	900 MHz ISM AND 802.11
MESH NETWORK	NONE	UP TO 65,536 MODULES AUTO CONFIG; 8 HOPS	NONE
ETHERNET	NO	NO	YES
PERFORMANCE			
MEMORY	512K SAMPLES – SINGLE CHANNEL, UP TO 128K SAMPLES FOR 4 CHANNELS	1MEG SAMPLE – SINGLE CHANNEL, UP TO 128K SAMPLES FOR 8 CHANNELS	1MEG SAMPLE – SINGLE CHANNEL, UP TO 128K SAMPLES FOR 8 CHANNELS SIMULTANEOUS
TRANSIENT CAPTURE	IMMEDIATE SAMPLING	RAMP UP / RAMP DOWN BASED ON TACH	RAMP UP / RAMP DOWN BASED ON TACH
TRANSIENT CAPTURE DURATION	25 SEC @ 1.25 KHz SAMPLE RATE, 1 CHANNEL	820 SEC @ 1.25 KHz SAMPLE RATE, 1 CHANNEL	820 SEC @ 1.25 KHz SAMPLE RATE, 1 CHANNEL
SPECTRAL	3-CHANNEL SIMULTANEOUS SAMPLING	7-CHANNEL SIMULTANEOUS SAMPLING	35-CHANNEL SIMULTANEOUS SAMPLING
FFT RESOLUTION	64K POINTS	64K POINTS	64K POINTS
ANALOG SIGNAL CONDITIONING	4^{TH} ORDER FILTER, 20 BIT A/D 40 KHz SAMPLE RATE	4^{TH} ORDER FILTER, 20 BIT A/D 40 KHz SAMPLE RATE	4^{TH} ORDER FILTER, 20 BIT A/D 40 KHz SAMPLE RATE
FREQUENCY RANGE	10 Hz TO 10 KHz	DC/1 Hz TO 120 KHz	DC/1 Hz TO 120 KHz
TRIGGERS	NONE	TRIGGER ON TACH	TRIGGER ON TACH
TRANSLATOR DATA COLLECTOR INTERFACE	OPTIONAL	OPTIONAL	OPTIONAL
MECHANICAL / ENVIRONMENTAL			
CONNECTIONS	RPSMA FOR ANTENNA BNC'S FOR INPUTS	RPSMA FOR ANTENNA BNC'S FOR INPUTS	RPSMA FOR ANTENNA BNC'S FOR INPUTS
ENCLOSURE	ANODIZED ALUMINIUM (WATERPROOF)	ANODIZED ALUMINIUM (WATERPROOF)	NEMA ENCLOSURE
OPERATING TEMP	-40 TO 85 DEG C	-40 TO 85 DEG C	-40 TO 85 DEG C
ELECTRICAL			
POWER REQUIREMENT	24 VDC / 200 MA	24 VDC / 200 MA	24 VDC / 400 MA

Why Spectrum's WAM Solution?

WAM Wireless Monitoring Solution

- Leading Edge Technology
- Low Implementation Cost
- Un-matched Compatibility
- Expandable
- Seasoned Hardware & Software
- Single Source
- Support (commissioning/training)
- Financing Options

Spectrum Products & Services

- Specializing in vibration measurement & monitoring techniques since 1992
- strategically located network of support personnel in key locations
- we service what we sell
- we provide solutions in condition monitoring technologies, including:
  - vibration
  - ultrasonics
  - thermography
  - optical inspection
- customer satifaction since 1992

SALES * COMMISSIONING * TRAINING * SERVICE * FINANCING

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