ETHERNET VIBE PORT

Installation
and
Operating Manual

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GV - 700E-F TRANSMITTER

GV - 730DR-E RECEIVER

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DISCLAIMER

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GVS Reliability Products

INTRODUCTION

- The Vibe Port Vibration Monitoring system is designed to allow raw mV waveform vibration data from standard vibration sensors to be analysed in a remote location over a LAN / WAN network.

⇒ It is ideal where access to vibration sensors is difficult due to Health & Safety or location issues. A typical installation diagram is shown below.

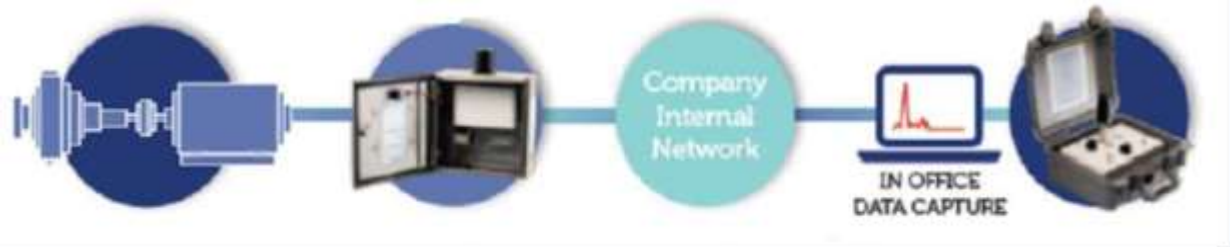
⇒ Any standard Vibration Data Analyser may be used by simply connecting the input of the analyser to the front panel BNC vibration output connector.

⇒ The Vibe Port Vibration Monitoring System comprises of one master Receiver Unit and multiple Transmitter Units which can have up to 8 vibration sensors attached.

⇒ The Vibration Hub Software manages the system and provides the user with vibration data together with the temperature reading of the vibration sensor if a dual output sensor is used.

⇒ Sampling rate is 50kHz, which translates to a reading every 20 micro seconds.

⇒ **See below for a system schematic overview:**

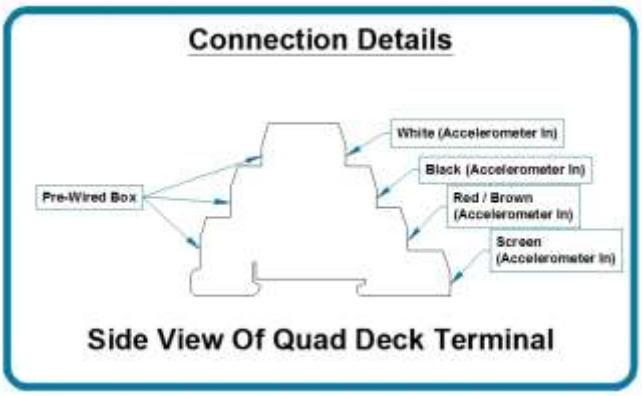


TRANSMITTER WIRING DIAGRAM

Terminal Block Wiring HS150T and 150ST

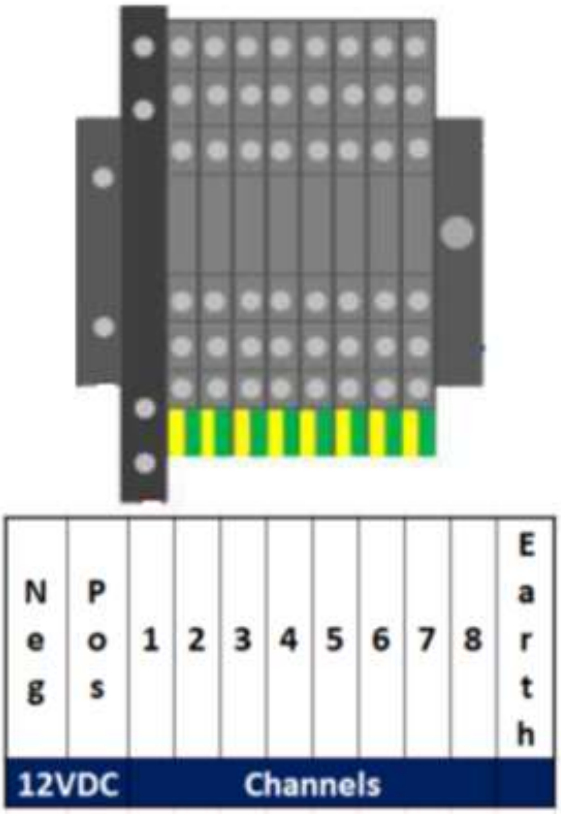
The Transmitter Unit can have up to 8 accelerometers connected into the 8 quad deck terminals with the connections as shown for each accelerometer from top to bottom.

The following table provides details of the standard HS-150T and HS-150ST sensor wiring.



Input	Wire Colour	Description
1	White	Sensor Signal
2	Black	Sensor Ground
3	Red/Brown	Sensor Temperature
Screen	Screen	Screen

External wiring connections as shown below.



ETHERNET SET-UP

The Vibe Port devices — Transmitter and Receiver need to be configured prior to installing on a LAN or WAN network. The task of assigning IP addresses should be carried out by a Network Administrator.

Transmitter Port

The default Transmitter IP Address is **192.168.1.30**, Port **7801.**
The port number can be changed using the 8-way dip switch (SW1) on the MB.

Dipswitches 4,5,6 should all be off for the defaults, however they can be changed to alter the transmitter port, so 8 are available if required.

4 5 6	Port
0 0 0	7801
0 0 1	7803
0 1 0	7805
0 1 1	7807
1 0 0	7809
1 0 1	7811
1 1 0	7813
1 1 1	7815

Note: Dipswitches 1,2,3 should always be off, else the transmitter channel selection will not work correctly.

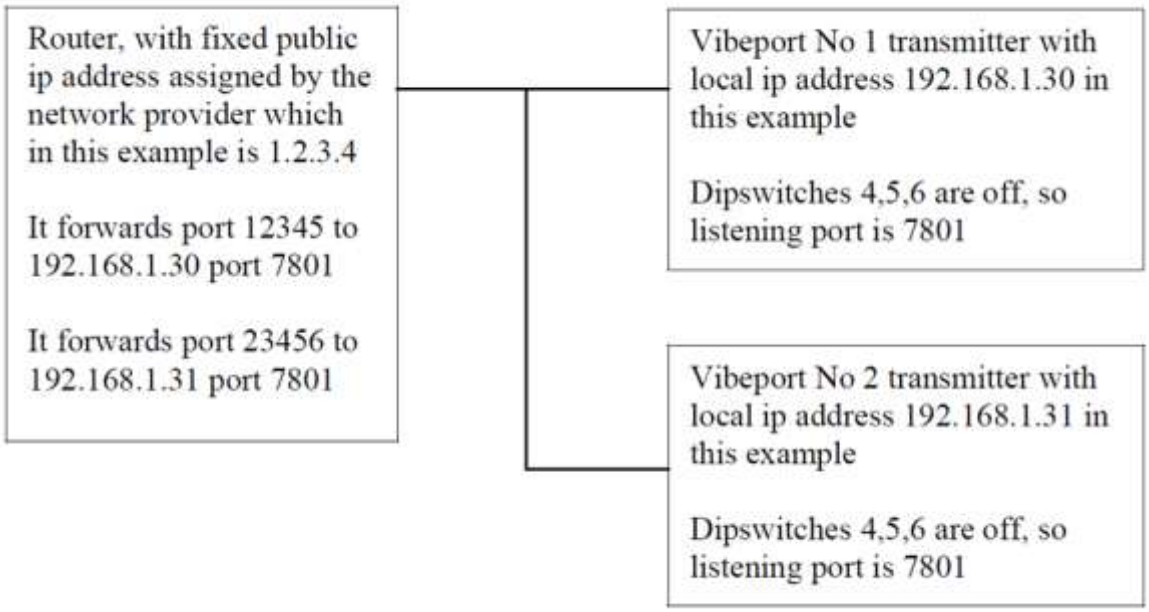
To connect to the transmitter from the pc software, the Router the Transmitter is connected to, must forward port 7801 to IP Address 192.168.1.30 (or others port as above, or another IP Address as below).

(Note that this is not required during testing if the transmitter is connected to a local network – just use the local IP Address 192.168.1.30 (or similar) in the Vibration Hub software.)

ASSIGN the TRANSMITTER NETWORK IP ADDRESS

The router that the Vibe Port Transmitter is connected to, must have a fixed public IP Address.

If more than one transmitter is to be connected to the router then each transmitter must have a different local IP Address. The following example shows two transmitters connect to a network.



The Transmitter IP Address can be changed using a program called **NetBurner IPSetup**.
Connect the Transmitter to the network.

Click the **Search Again** button to see the IP Address of the transmitter in the **Select a Unit** window. In the example below it is 192.168.15.30

In **NDK Settings** change the IP to the new one required. In this example it is being changed to 192.168.1.30.

Click the **Set** button, wait a few seconds then click the **Search Again** button.
The IP Address should have changed.

When the Transmitter is used on a remote network, the Vibration Hub PC software must connect to the internet IP Address of the Router, on port 7801 (or port selected using dip switch SW1). Remember to forward the port on the Router to the local IP Address of the Transmitter set up using IPSetup.

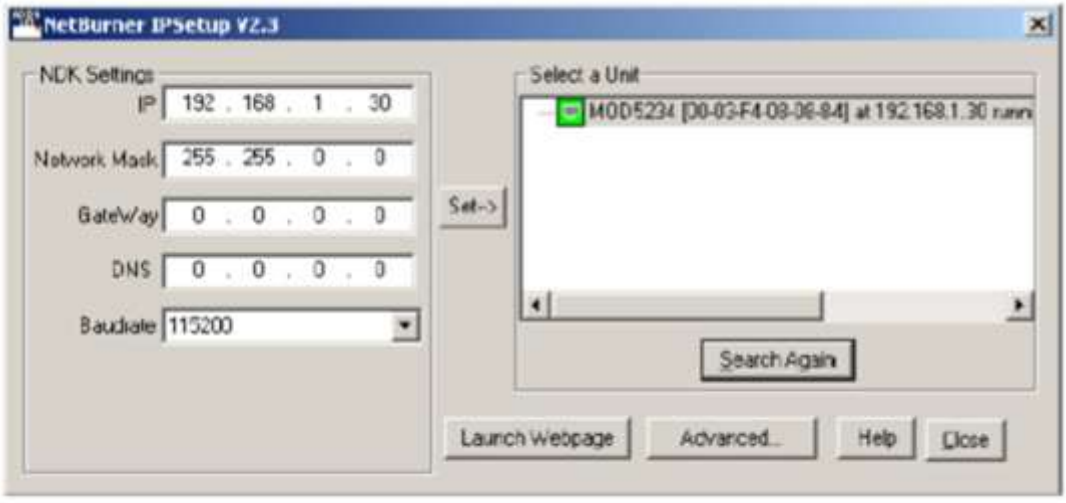
ASSIGN the RECEIVER NETWORK IP ADDRESS

The default Receiver (player) IP Address is **192.168.1.91**, Port **7802**.

The Receiver IP Address can be changed using a program called **NetBurner IPSetup**.
Connect the Receiver to the same local network as the pc running the Vibration Hub software.

Click the **Search Again** button to see the IP Address of the Receiver in the **Select a Unit** window.

In **NDK Settings** change the IP to the new one required. Click the **Set** button, wait a few seconds then click the **Search Again** button. The IP Address should have changed.



PORT FORWARDING

By default, the Router firewall blocks all connection attempts by devices on the Internet to devices in your local network. Port forwarding is required to allow communications via the Router on the network.

The router must be configured to allow the Vibration Hub program to connect through the router firewall directly to the transmitters.

In this example add the following to the Virtual Server/Port Forwarding settings in the router.

Service	Name Port Range	Local IP	Local Port	Protocol
Vibeport No 1	12345	192.168.1.30	7801	TCP
Vibeport No 2	23456	192.168.1.31	7801	TCP

Once these settings have been entered and saved, allow the router to apply the settings and reboot if required.

In the Vibration Hub program (which could be running on a PC with an internet connection anywhere), to make a connection to Vibeport No 1, the IP Address to use is 1.2.3.4 and the Port is 12345.

The IP Address is 1.2.3.4 because this is the public IP Address of the router that is visible to the internet.

The Port is 12345 because this is the port that has been “opened” and forwarded to allow connection to Vibeport No 1.

The router diverts packets addressed to 1.2.3.4 port 12345 to 192.168.1.30 Port 7801 allowing the

Vibration Hub program to connect to Vibe Port No 1 and request data etc.

Install the Vibration Hub Software

Vibration Hub Software manages communication between the Transmitter and PC, receives data from the Transmitter and saves this data to the local PC database.

You may need computer administration permissions to install the software.
Double click on the Vibration Hub Zip File to unpack the files.
Save the Vibration Hub Application to your desired location.

Using Vibration Hub Software to collect data

The Vibration Hub (manual) software allows you to record data on the individual channels of each Transmitter in turn.

Requesting a recording

Enter the IP Address for the router, the transmitter is connected to and the port.
Select **Connect**. A Vibe-port transmitter connected message will indicate when the transmitter is connected
Select the channel to be recorded by selecting the channel number from the **Read Transmitter Channel No** dropdown box
Click on **Read Transmitter Channel No** to record the channel.
A timer will indicate how many seconds are remaining for each recording.
Once recorded you will be requested to save the file. Browse to your preferred location and select **SAVE.** The channel, date, time, ip address and port are automatically used in the file name.
Repeat this procedure to capture the data on the remaining channels

Repeat this procedure to record the data on the remaining saved channels

Using Vibration Hub Auto Software to collect data

The Vibration Hub Auto Software allows you to schedule data recordings on multiple Transmitters.

When the program runs for the first time, it creates a file called HubAction.txt, which it uses to save the Route information. If the file does not exist it will display the message above.

To add jobs to the route, click **Program Vibration Analysis Route** and **Yes** to the confirmation box.

A spreadsheet will open and allow you create all of the jobs in the route with the following columns:

Site & Asset Name – Enter the location and name of machine. This text will be used to identify the origin of the saved vibration file.

Sensor Name – Enter the location of the sensor. This text will be used to identify the origin of the saved vibration file.

Note: Only use letters or numbers as these names are used when generating the .vib File. Most punctuation characters will make a file name invalid, stopping it from being saved.

Next Read Day – The name of the day ie. Monday, Tuesday etc.

Next Read Date – 07-03-2018 Date format is required.

Next Read Time – The time of the next read in 24 Hr format ie. 08.23…..17.00

Channel Number – Where 1 corresponds to Sensor 1 wired to terminals 1,2,3.

Hours between Read – Minimum is 1 hour. Maximum is 8760. If a sensor must be read more often than once every hour, another job can be added to read the same sensor at a difference Read time.

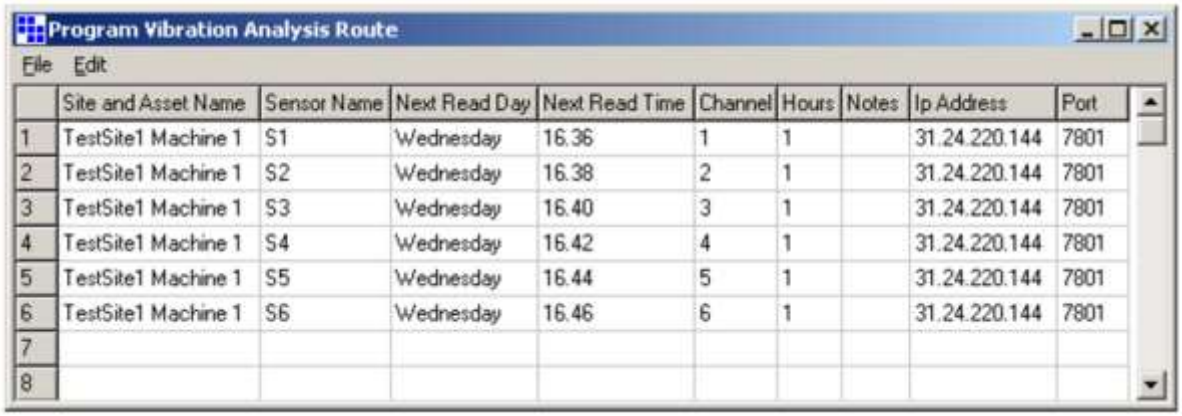
Notes – Add information about the asset.

IP Address – This is usually the fixed ip address of the router (that the transmitter is connected to), which has been set up to forward ports to the local transmitter.

Port – This is usually the port that has been opened on the router to allow incoming connections to the local transmitter.

It is possible to copy all the data in the spreadsheet using **Edit > Copy All for Export**. The contents of the spreadsheet can then be pasted into a spreadsheet program and saved/printed etc.

Once the details of the route have been entered, click **File > Save and Exit** to save the changes and close the form. If there are any errors, messages will be shown indicating the problem and location to allow them to be corrected.



	Site and Asset Name	Sensor Name	Next Read Day	Next Read Time	Channel	Hours	Notes	Ip Address	Port
1	TestSite1 Machine 1	S1	Wednesday	16.36	1	1		31.24.220.144	7801
2	TestSite1 Machine 1	S2	Wednesday	16.38	2	1		31.24.220.144	7801
3	TestSite1 Machine 1	S3	Wednesday	16.40	3	1		31.24.220.144	7801
4	TestSite1 Machine 1	S4	Wednesday	16.42	4	1		31.24.220.144	7801
5	TestSite1 Machine 1	S5	Wednesday	16.44	5	1		31.24.220.144	7801
6	TestSite1 Machine 1	S6	Wednesday	16.46	6	1		31.24.220.144	7801
7									
8									

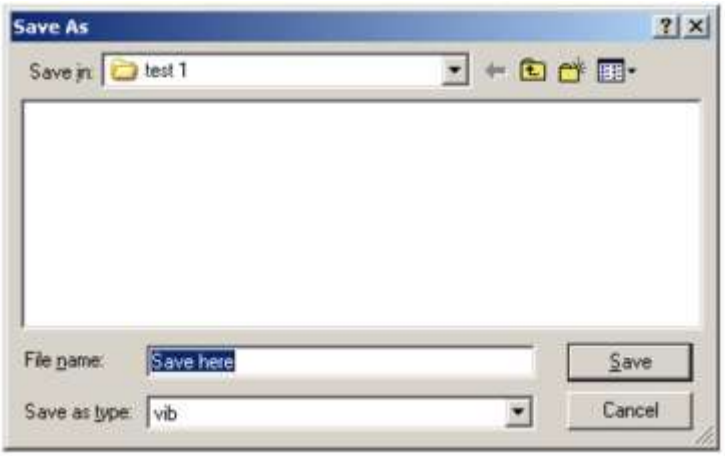
Once the form is closed, a message will be shown in the Transmitter message window:

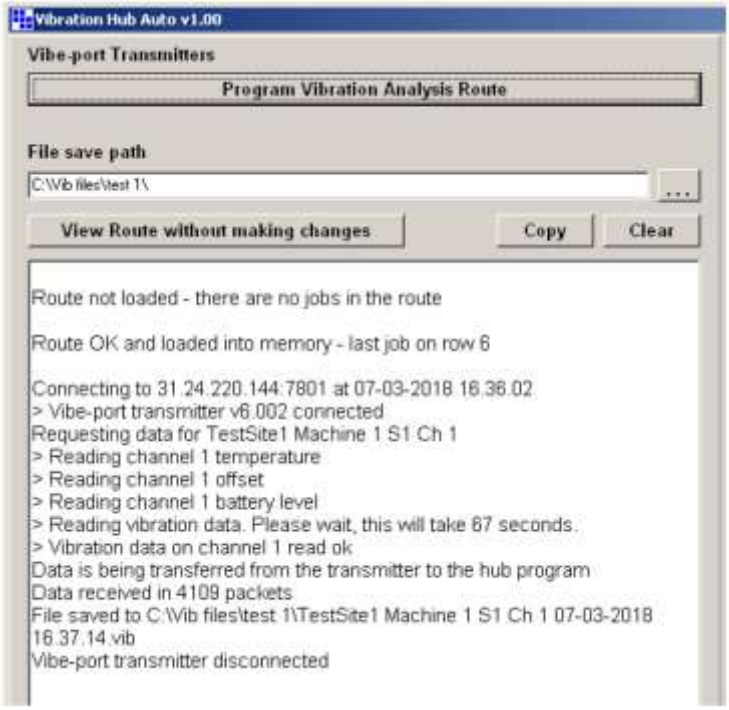
"Route OK and loaded into memory – last job on row 6" indicating that there were no errors in the spreadsheet and the program will now gather data as programmed.

To delete data, select the cell in the spreadsheet and select **Delete.** Tab across the row to delete data in the row.

The location for the **.vib** files to be saved can be selected by clicking the **[…]** button.

Navigate to the required directory and click **Save.**





When the scheduled time occurs, in this case at 16.36 on 7th March 2018, the program will connect to the transmitter and request, download and save the data as shown above, indicating progress in the message box.

Lines with a > at the start are responses from the Vibe Port Transmitter. It is possible to copy the contents of the message box using the **Copy** button.

The message box can hold a maximum of 2000 lines before the oldest are deleted. Clear the contents of the message box using the **Clear** button.

Each .vib file is 5.68 Mb

Once complete the Route can be viewed using the **View Route without making changes** button. This form will also show the calculated Next Read Date if the Hours between read column has been used.

Using a Data Collector to take a measurement

Enter the IP Address for the receiver and the port.

Select **Connect**. A Vibe-port receiver connected message will indicate when the receiver is connected

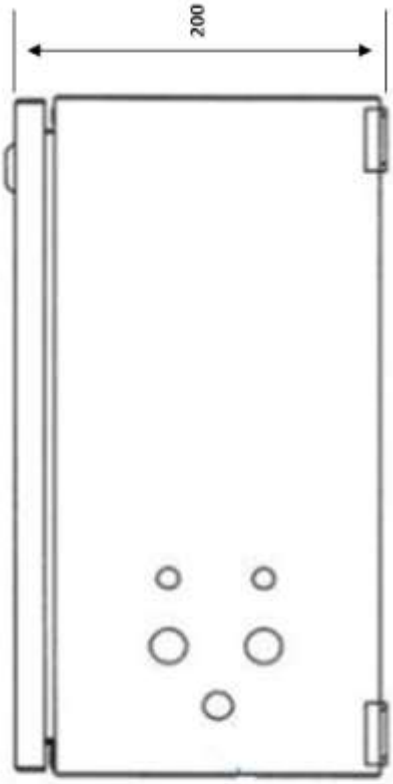
Connect the Vibration Analyser input channel to the receiver **Vibration** BNC Connector. (Ensure the analyser drive current is OFF) Temperature can be read on the **Temperature BNC** connector.

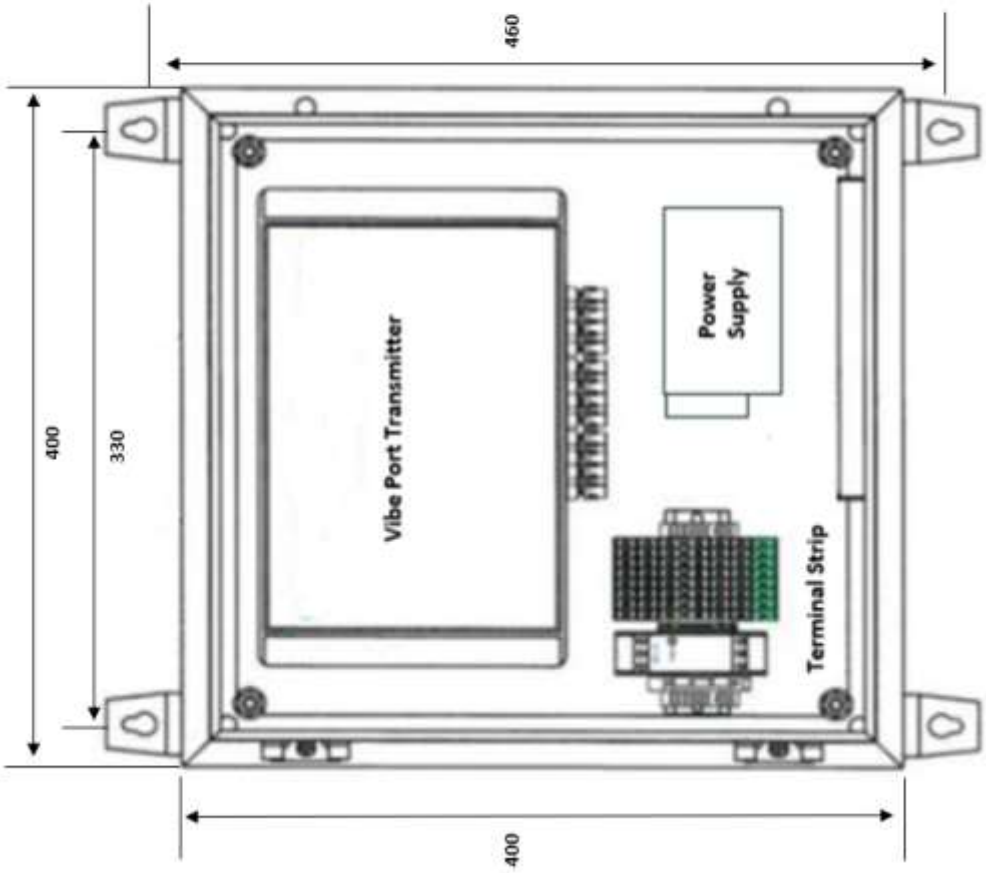
Select, **Select a .vib File to Play,** browse to the saved location and select **PLAY.** A 60 second file will be sent to the receiver.

Take the recording with your Data Collector. The file can be repeatedly played by selecting **Play Again**

Repeat this procedure to record the data on the remaining saved channels

VIBE PORT TRANSMITTER ASSEMBLY ENCLOSURE DIMENSIONS





HS-150ST Premium Accelerometer

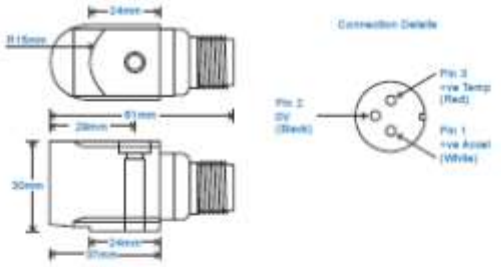
AC acceleration and temperature output via 3 Pin MS Connector

Key Features

- Temperature output
- Side entry for easy access
- Premium design

Industries

Building services, Pulp and Paper, Mining, Metals, Utilities, Automotive, Water, Pharmaceutical



Technical Performance

Mounted Base Resonance	see 'How To Order' table (nominal)
Sensitivity	see: 'How To Order' table ±10%
	Nominal 60Hz at 22°C
Frequency Response	1.5Hz (90cpm) to 10kHz (600kcpm) ± 5%
	0.5Hz (30cpm) to 12kHz (720kcpm) ± 10%
	0.2Hz (12cpm) to 15kHz (900kcpm) ± 3dB
Isolation	Base isolated
Range	see: 'How To Order' table
Temperature Output	10 mV/°C standard 100°C - Option 130°C
Transverse Sensitivity	Less than 5%

Mechanical

Case Material	Stainless Steel
Sensing Element/Construction	PZT/Shear
Mounting Torque	8Nm
Mounting Bolt Provided	see: 'How To Order' table x 35mm long
Weight	205gms (nominal)
Screened Cable Assembly	see: www.hansfordsensors.com for options
Connector	HS-AA005 - non-booted
	HS-AA068 or HS-0069 - booted
Mounting Threads	see: 'How To Order' table

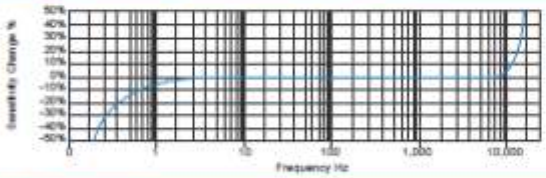
Electrical

Electrical Noise	0.1mg max
Current Range	0.5mA to 8mA
Bias Voltage	10 - 12 Volts DC
Settling Time	1 second
Output Impedance	200 Ohms max.
Case Isolation	>10^8 Ohms at 500 Volts

Environmental

Operating Temperature Range	-55 to 130°C
Sealing	IP68
Maximum Shock	5000g
EMC	EN61326-1:2013

Typical Frequency Response (at 100mV/g)



Applications

Fans, Motors, Pumps, Compressors, Centrifuges, Conveyors, Air Handlers, Gearboxes, Rolls, Dryers, Presses, Cooling, VAC, Spindles, Machine Tooling, Process Equipment

Vibration sensor should be firmly fixed to a flat surface (spot face surface may be needed to be produced and cable anchored to sensor body.)

How To Order

Product Prefix
HS - Hansford Sensors

Product Series
150 - Premium Industrial Vibration Sensor

Cable Length (if integral cable)
QXX - length specified in metres

H	S	1	5	0	S	T	X	X	X	X	X	X	X	X	X	X

Extra Options (if required)
F - Filtered
L - 316L Stainless Steel
RT - Temperature Output PT100
S - 90° Side Exit
T - Temperature Output
Y - 5% tolerance on sensitivity

Sensitivity	Range	Resonant Frequency
010 - 10mV/g	±800g	27kHz (1,620kcpm)
030 - 30mV/g	±250g	25kHz (1,500kcpm)
050 - 50mV/g	±160g	23kHz (1,380kcpm)
100 - 100mV/g	±80g	21kHz (1,260kcpm)
250 - 250mV/g	±32g	19kHz (1,140kcpm)
500 - 500mV/g	±16g	17kHz (1,020kcpm)

Cable/Connector
01 - PUR
03 - Braided
07 - Silicon
15 - Flame Retardant
E2 - 3 Pin MS
E4 - M12

Mounting Threads
02 - 1/4-28" UNF Male
06 - M6 x 1mm Male
08 - M8 x 1.25mm Male

Hansford Sensors
Excellence in Vibration Monitoring

www.hansfordsensors.com
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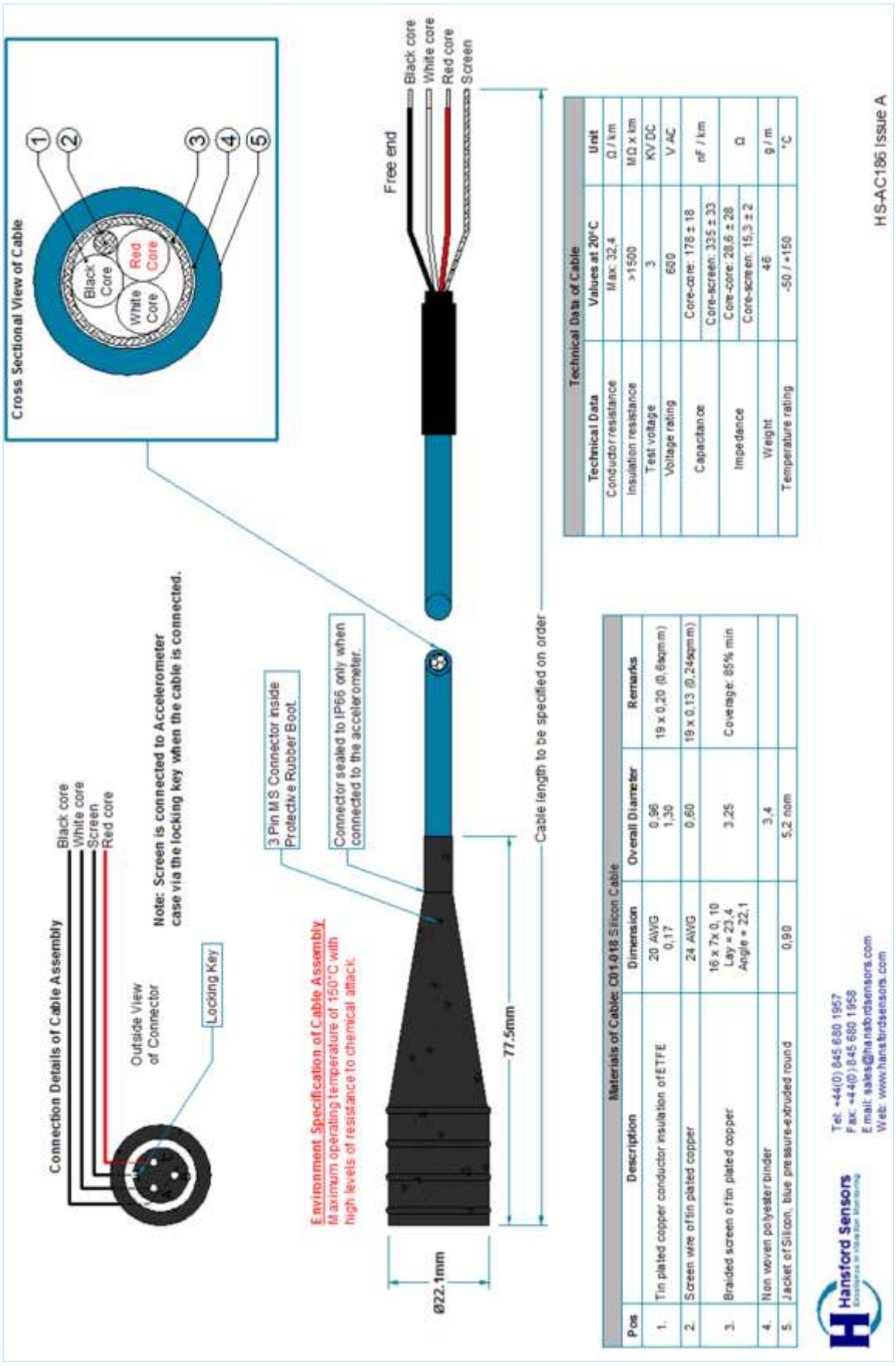
We reserve the right to alter the specification of this product without prior notice

T0215.3

HS - AC186 CABLE ASSEMBLY



Technical Data of Cable		
Technical Data	Values at 20°C	Unit
Conductor resistance	Max: 32.4	Ω / km
Insulation resistance	>1500	MΩ x km
Test voltage	3	KV DC
Voltage rating	600	V AC
Capacitance	Core-core: 178 ± 18	nF / km
	Core-screen: 335 ± 33	
Impedance	Core-core: 28.6 ± 28	Ω
	Core-screen: 15.3 ± 2	
Weight	46	g / m
Temperature rating	-50 / +150	°C

Materials of Cable: C01-018 Silicon Cable				
Pos	Description	Dimension	Overall Diameter	Remarks
1.	Tin plated copper conductor insulation of ETFE	20 AWG 0,17	0.96 1,30	19 x 0,20 (0.6sqmm)
2.	Screen wire of tin plated copper	24 AWG	0,60	19 x 0,13 (0,24sqmm)
3.	Braided screen of tin plated copper	16 x 7x 0, 10 Lay = 23,4 Angle = 22,1	3.25	Coverage: 85% min
4.	Non woven polyester binder		3,4	
5.	Jacket of Silicon, blue pressure-extruded round	0,90	5.2 nom	

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