SKF Multilog IMx with SKF @ptitude Analyst Condition Monitoring System Point Counts

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Introduction

In an installation where the SKF Multilog On-line System IMx is used with the SKF @ptitude Analyst software it is possible to configure different type of measurement points. The type of points depends on the selected Application **(Figure 1)**. Each Application has an associated set of sensor type(s) **(Figures 2 and 3)**.

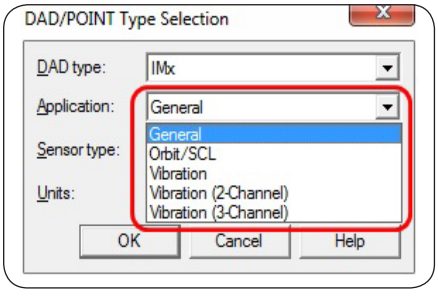

Figure 1. Type of measurement points available for SKF Multilog IMx units.

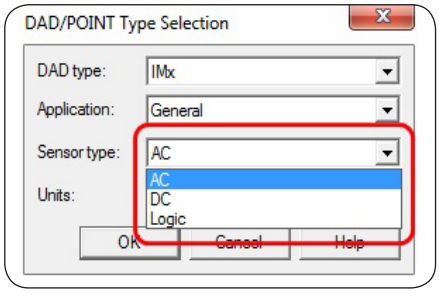

Figure 2. Sensor type for General measurement points.

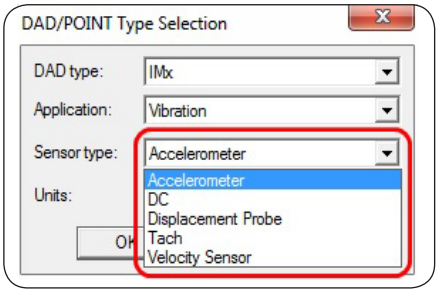

Figure 3. Sensor type for Vibration measurement points.

Based upon the selected combination Application / Sensor type, a measurement point with configurable characteristics will be created in the SKF Multilog IMx. In the SKF Multilog IMx there is a limit to the number of points that can be created. This document describes the various point types that can be created in an SKF Multilog IMx system with the SKF @ptitude Analyst software and discusses the number of point limits that the SKF Multilog IMx system has.

Point Counts

When configuring an SKF Multilog IMx unit with SKF @ptitude Analyst it is important to be aware of the limit of measurement points that can be created, the maximum number is 100 measurement points per SKF Multilog IMx unit. This maximum number of measurement points can be distributed between **Active Static Measurement** points and **Active Dynamic Measurement** points, where:

- **Active Dynamic Measurement points (up to 80):** are measurements of dynamic signals such as vibration sensors, AC current or any other dynamic signal that could change at a frequency faster than 0,1 Hz.
- **Active Static Measurement points (up to 100):** are measurements of static / process signals where the DC component is measured from multiple types of sensors such as load, temperature and pressure. These measurements can also be digital, coming from a switching sensor like a tachometer or a PLC denoting an ON / OFF state. Active Static Measurement points shall be associated either to a digital channel, an analogue channel or a Modbus import channel.

The above means when 80 dynamic measurement points are created, there is space for 20 static measurement points left. When there are 100 static measurement created, no space for dynamic measurements is left.

The set of points can be associated to different type of channels. For SKF @ptitude Analyst with a SKF Multilog IMx module (–B, –C, –P, –S, –T,)* the following input channels are possible:

- 8 digital channels
- 16 analogue channels
- 16 modbus import channels

* SKF Multilog IMx-S-32 has two modules and SKF Multilog IMx-T has up to 4 modules.

Finally, the measurement points can be associated up to 5 different transient groups per SKF Multilog IMx module.

Since some measurement points use multiple channels or even multiple measurements like both a static and a dynamic point in the background, the actual point count used by the SKF Multilog IMx can be higher than the user expects.

In SKF @ptitude Analyst, the measurement point equivalency to the type of point counts will be:

Point counts per measurement type **Table 1**

Point type	Number of channel inputs	Static point count	Dynamic point count
General	Logic	1	– – –
	DC	1	– – –
	AC	– – –	1
	Modbus	1	– – –
Orbit/SCL	Accelerometer	3	1
	Velocity sensor	3	1
	Displacement probe	3	1
Vibration	Accelerometer	– – –	1
	Velocity sensor	– – –	1
	Displacement probe	– – –	1
	DC	1	– – –
	Tach	1	– – –
Vibration 2-channel	Accelerometer	– – –	3
	Velocity sensor	– – –	3
	Displacement probe	– – –	3
Vibration 3-channel	Accelerometer	– – –	4
	Velocity sensor	– – –	4
	Displacement probe	– – –	4
	Triax	– – –	4
Check sensor OK status enabled		1	– – –

Example 1

A hydro turbine with a set of sensors installed according to **Figure 4** requires the following type of measurements:

- Orbits/SCL in the 3 bearings
- Single vibration points for the accelerometers
- Axial position
- Load
- Cable check
- Speed

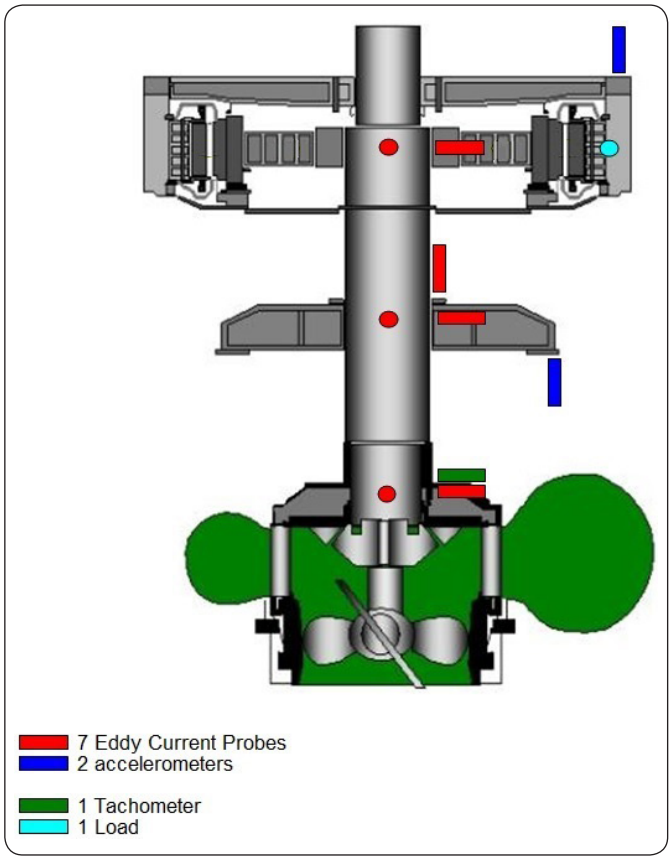

Figure 4. Hydro turbine and its installed sensors.

To determine the point count for the desired configuration it is necessary to check each type of required measurement point and compare it with the information in **Table 1**. Accordingly, the counts for each type of point are shown in **Table 2**:

Table 2

	Total measurement points	Channel inputs per point	Total analgue channels	Total digital channels	Total point counts
Shaft Center Line measurement points (3 X-Y Eddy Probes)	3	2	6	– – –	3 static and 9 dynamic
Single vibration measurement points (Accelerometers)	2	1	2	– – –	2 dynamic
Axial position measurement points	1	1	1	– – –	1 static
Load measurement point	1	1	1	– – –	1 static
Cable check	– – –	– – –	10	– – –	10 static
Speed measurement point	1	1	– – –	1	1 static

Then for this specific configuration a total of 11 dynamic points and 16 static points will be used in the SKF Multilog IMx.

Example 2

In a paper machine with multiple SKF Multilog IMx-S units is desired to measure from each of the 16 accelerometers mounted per SKF Multilog IMx card:

- Velocity
- Acceleration (Fmax = 6 KHz)
- Acceleration (Fmax = 30 KHz)
- Enveloping 2
- Enveloping 3
- DC level
- Sensor OK enabled

and from 1 digital channel:

- Speed

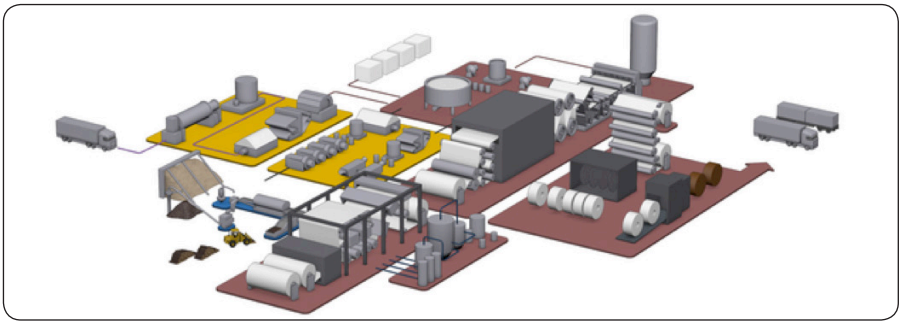

Figure 5. General paper mill process map.

To determine the point count for the desired configuration, it is necessary to check each type of required measurement point and compare it with the information in **Table 1**. Accordingly, the counts for each type of point are shown in **Table 3**:

Table 3

	Total measurement points	Channels to be evaluated	Total point counts
Velocity	16	– – –	16 dynamic
Acceleration (Fmax = 6 KHz)	16	– – –	16 dynamic
Acceleration (Fmax = 30 KHz)	16	– – –	16 dynamic
Enveloping 2	16	– – –	16 dynamic
Enveloping 3	16	– – –	16 dynamic
DC level	– – –	16	16 static
Sensor OK	– – –	16	16 static
Speed	1	– – –	1 static

Then for the specific configuration a total of 80 dynamic points and 33 static points will be used. This exceeds the total amount of measurement points supported by the SKF Multilog IMx and an alternative configuration with fewer points shall be implemented.

For example remove the:

- Acceleration (Fmax = 6 KHz)
  - Total measurement points 16
  - Total point counts 16 dynamic

And modify the 30 KHz to a higher resolution.

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