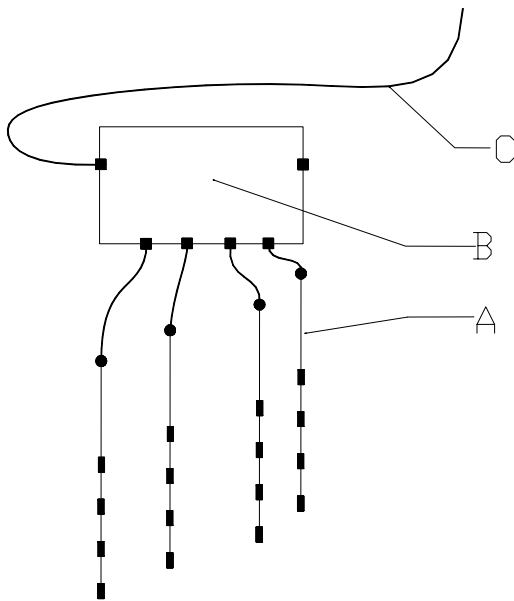


CAP 100

CAP100 represents the limit as to the number of sensing cables that can be joined together onto a single 2-wire line. Each sensing cable, sensor, foot of sensing cable and foot of 2-Wire Interconnect have a value, and the total value of the line cannot exceed 100.

If the total value of the interconnected system exceeds 100, system needs to be split into 2 multiple 2-Wires lines, with each line being less than 100. Multiple 2-Wire lines are then fed into multi-port 3-wire Line-Expanders, which come in one, two and four channel flavors. Once converted to 3-Wire, or terminated into an RTU on the StorMaxPro system, the CAP100 rule no longer applies.

Example: 2-Wire Line:



Explanations:

- A. Multiple sensing cables joined by 2-Wire Interconnect into a multi-port 2-Wire Line Divider in a central location.
- B. INT2-0XLD 2-Wire Line Divider (in this case INT2-05LD) collecting all sensing cables into one line.
- C. INT2-IXXX 2-Wire Interconnect cable leading to additional 2-Wire line dividers, 3-Wire Line Expander, a StorMax monitor or an RTU.

CAP 100 - COMPONENT & PART VALUES

Following components make up a 2-Wire line:

1. Sensing cables
2. Interconnect cables (2 wire)
3. Line Dividers

CAP 100 values for the various components can be found in the following chart as well as in most price pages, whether as a complete assembly or by component value.

Also attached are a series of CAP 100 example calculation sheets to better understand how CAP 100 values are calculated.

Item Description	CAP 100 value Imperial	CAP 100 value Metric
SE3 Series 3 Sensing Element		
per Sensing Element	1.33 / each	1.33 / each
per each Sensor	0.19 / each	0.19 / each
per Sensing Element length	0.12 / foot	0.40 / meter
INT2 2-Wire Interconnect cable		
per length of lead cable	0.09 / foot	0.30 / meter
2-Wire Line Dividers	No value	No value
3-Wire Line Expanders	No value	No value
INT3 3-Wire Interconnect cable	No value	No value

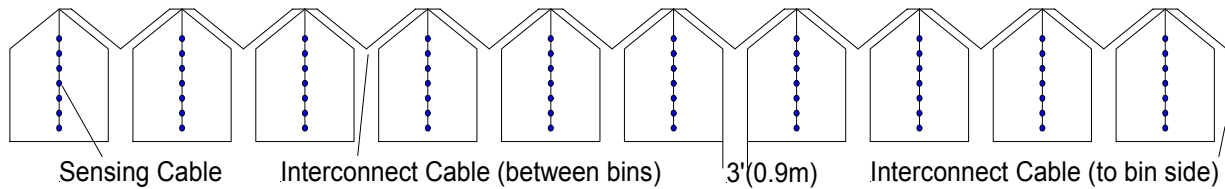
Example 1:

Single row of 10 bins with one cable per bin

Westeel 19-8: 19'D x 20'E x 26'R

In this example, 10 single cable bins will be inter-connected into a single "2-Wire Line". The following illustration describes how each component part is generated then how the CAP 100 value is calculated for entire 2-Wire Line. In this example, the entire 2-Wire Line is less than 100, so it is possible to connect everything into a single continuous line, without needing 3-Wire Line Expanders.

10 Bins Inter-connected
 Side View



Description	Code	CAP 100 Imperial units		#	Total Imperial units
Per Bin					
Sensing Cable (6 sensors, 24' sensing, 0' Lead)	06ED-I023-SE3A				
Per each cable		1.33	x	1	1.33
Per sensor		0.19	x	6	1.14
Sensing Cable - Per ft		0.12	x	23	2.76
CAP100 Per Bin					5.23
INT2 2-Wire Interconnects					
Between bins; Calculate distance along roof and between bins $(9.5/.86)*2 + 3' = 25'$ go to 30'	INT2-030	0.09 /ft	x	30	2.70
To bin side; $9.5/.86 + 20' - 3' = 28'$ go to 30'	INT2-030	0.09 /ft	x	30	2.70
CAP100 Total of the 2-Wire Line					
Per bin	06ED-I023-SE3A	5.23	x	10	52.30
Interconnect cable between bins	INT2-030	2.70	x	9	24.30
Interconnect cable to bin side	INT2-030	2.70	x	1	2.70
2-Wire Line - Total					79.30

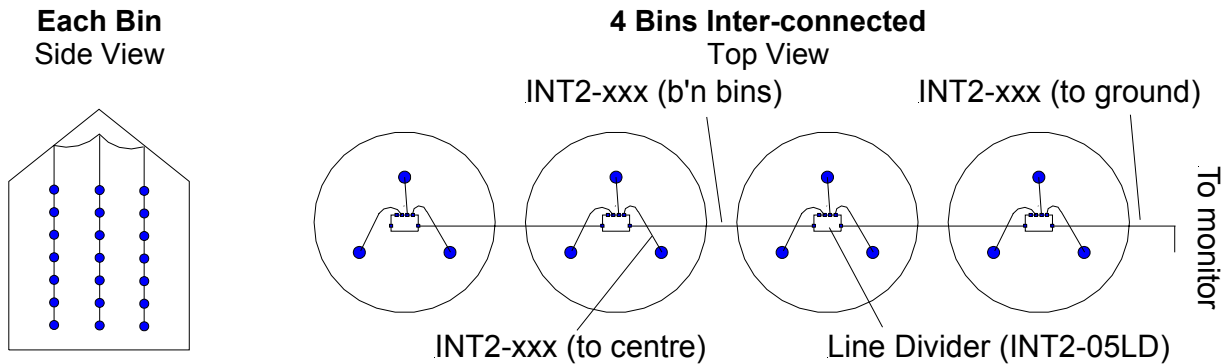
Conclusion; CAP100 value of 79.30 is less than 100, so ok.

Example 2:

Single row of 4 bins with 3 sensing cables per bin

Twister 32-8: 32'D x 24'E x 32'R

Similar in fashion to a continuous line, the cables in each bin are routed to a central 2-Wire Lien Divider at the top of each bin. From there, the bins are joined by 20Wire Interconnect, then routed to ground for single point plug in by a StorMax monitor.



Description	Code	CAP 100 Imperial units		#	Total Imperial units
Bin Components					
Sensing Cable (6 sensors, 24' sensing, 0' Lead)	06ED-I023-SE3A				
Per each cable		1.33	x	1	1.33
Per sensor		0.19	x	6	1.14
Sensing Cable - Per ft		0.12	x	23	2.76
Total Per Cable					5.23
Interconnect cables inside bin	INT2-015	0.09 /ft	x	15	1.35
Per Bin					
Sensing Cables	06ED-I023-SE3A	5.23	x	3	15.69
Interconnect Cables, inside bin	INT2-015	1.35	x	3	4.05
CAP 100 Per Bin					19.74
Bin Connection & Other Components					
Interconnect cables between bins	INT2-035	0.09 /ft	x	35	3.15
Interconnect cable to bin side read-out	INT2-035	0.09 /ft	x	35	3.15
2-Wire Line					
Per Bin		19.74	x	4	78.96
Interconnect cables between bins	INT2-030	3.15	x	3	9.45
Interconnect cable to bin side read-out	INT2-035	3.15	x	1	3.15
2-Wire Line – Total					91.56

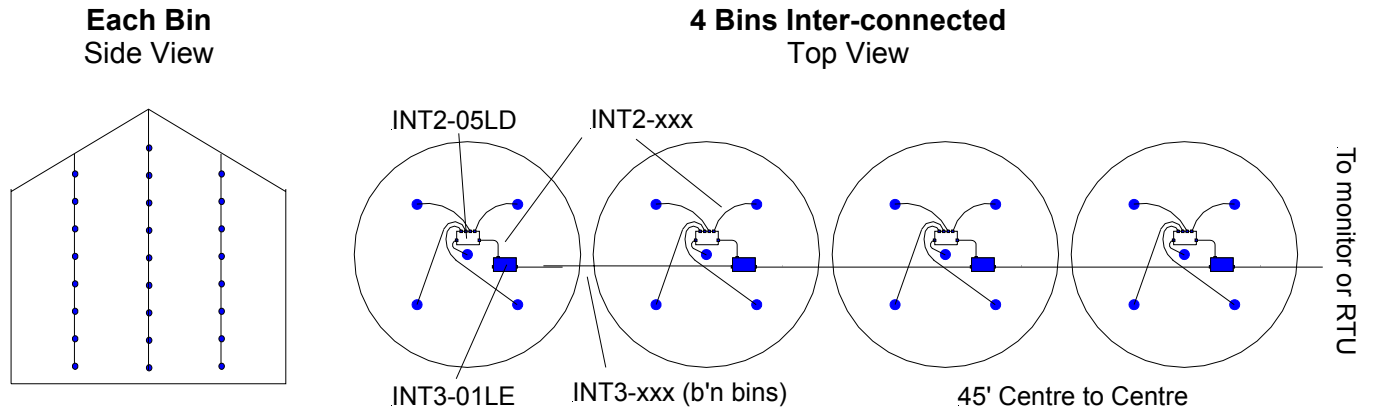
Conclusion; CAP100 value of 91.56 is less than 100, so ok.

Example 3:

Single row of 4 bins where CAP100 value exceeds 100 limit

Westeel 4208: 42'D x 29.5'E x 40.8'R

In this example, the CAP 100 limit will be easily exceeded, given a CAP 100 value for all components in each bin is 42.06. With a sequential line of bins, it is easier to establish a single 3-Wire Line which consists of a series of INT3-01LE 1-Line expanders, which are joined by INT3 3-Wire 3-wire interconnect cables.



Description	Code	CAP 100 Imperial units		#	Total Imperial units
Per Bin					
Centre Cable (9 sensors, 36' sensing, 0' Lead)	09ED-036F-000A	7.72	x	1	7.72
Outer Cable (8 sensors, 32' sensing, 0' Lead)	08ED-032F-000A	7.01	x	4	28.04
Interconnect Cables from center cable to INT2-05LD	INT2-005	0.45	x	1	0.45
Interconnect Cables from outer cable to INT2-05LD	INT2-015	1.35	x	4	5.40
Line Divider		0	x	1	0.00
Interconnect Cables from centre cable to INT3-01LE	INT2-005	0.45	x	1	0.45
CAP 100 Per Bin = 2 wire line total					42.06

Conclusion; CAP100 value of 42.06 per bin ends when converting to 3-Wire system

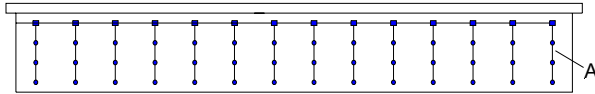
Example 4:

Flat Store, sensing cables connected using INT3-04LE - 4 Line Expanders

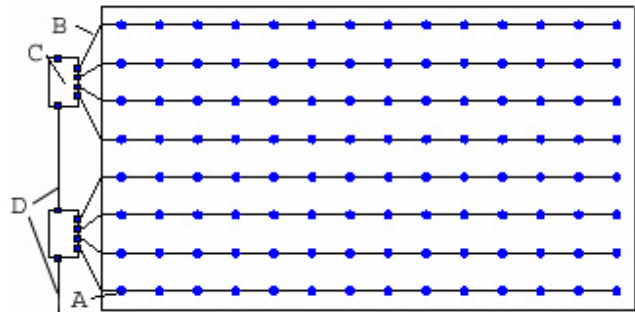
Flat store 280' x 160'; 8 rows with 14 sensing cables per row

With sensing cables grouped into rows inside a common structure, it is easier to use 4 Line Expanders. The first decision is whether the cables will be joined in rows along the rafters or down the length of the building. We will assume lengthwise for this example. With a CAP 100 of 77.2 per row, each row represents a separate 2-Wire Line. With eight 2-Wire Lines, two at INT3-04LE 4-Channel Line expanders are required.

Flat Store, side view



Flat Store, top view



Explanations:

- A. Sensing Cable
- B. INT2-I0XX 2-Wire cable-cable interconnect
- C. INT3-04LE 4-Channel Line Expanders
- D. INT3-I0XX 3-Wire Interconnect Cable

Description	Code	CAP 100 Imperial units	#	Total Imperial units
Largest 2-wire Line (row of sensing cables)				
3 sensor by 12' cables, Male/Female connectors	03ED-I011-SE3B	3.22	x 14	73.64
INT2-I025 2-Wire Interconnect Cables,	INT2-025	2.25	x 14	31.50
2 -Wire Line – Total				104.14

Conclusion; Since “rules are made to be broken” will attempt 2-Wire with CAP104