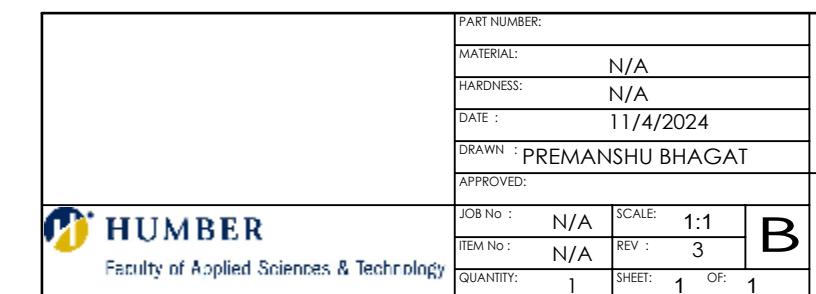


MECHANICAL DRAWINGS - TABLE OF CONTENTS

SERIAL NUMBER	DRAWING NAME
1	COMPLETE CELL LAYOUT
2	SEQUENCE OF OPERATION
3	MAJOR COMPONENTS
4	CELL FRAME WITH ELECTRICAL PANEL
5	CELL BASE STRUCTURE
6	ROTARY TABLE ASSEMBLY
7	BACK DOOR ASSEMBLY
8	FRONT DOOR ASSMBLY
9	ACRYLIC FRAME TOP SIDE
10	ACRYLIC PANEL CONVEYOR PASS THROUGH
11	ACRYLIC FRAME FOR HINGES
12	ACRYLIC PANEL BELOW MONITOR
13	ACRYLIC PANEL 800X500 MM
14	ACRYLIC PANEL BASE COVER
15	ROTARY TABLE BOTTOM PLATE
16	ROTARY TABLE TOP PLATE
17	ACRYLIC PANEL - ETHERNET ADAPTER AND PC MOUNT
18	LOWER ACRYLIC PANEL - ETHERNET ADAPTER MOUNT
19	BACK DOOR PANEL
20	SICK LOGO BASE PANEL

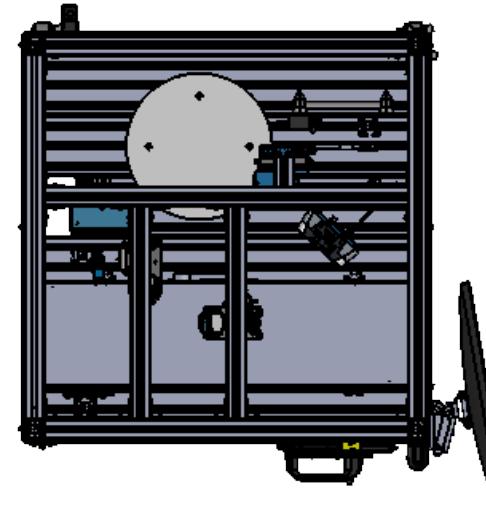
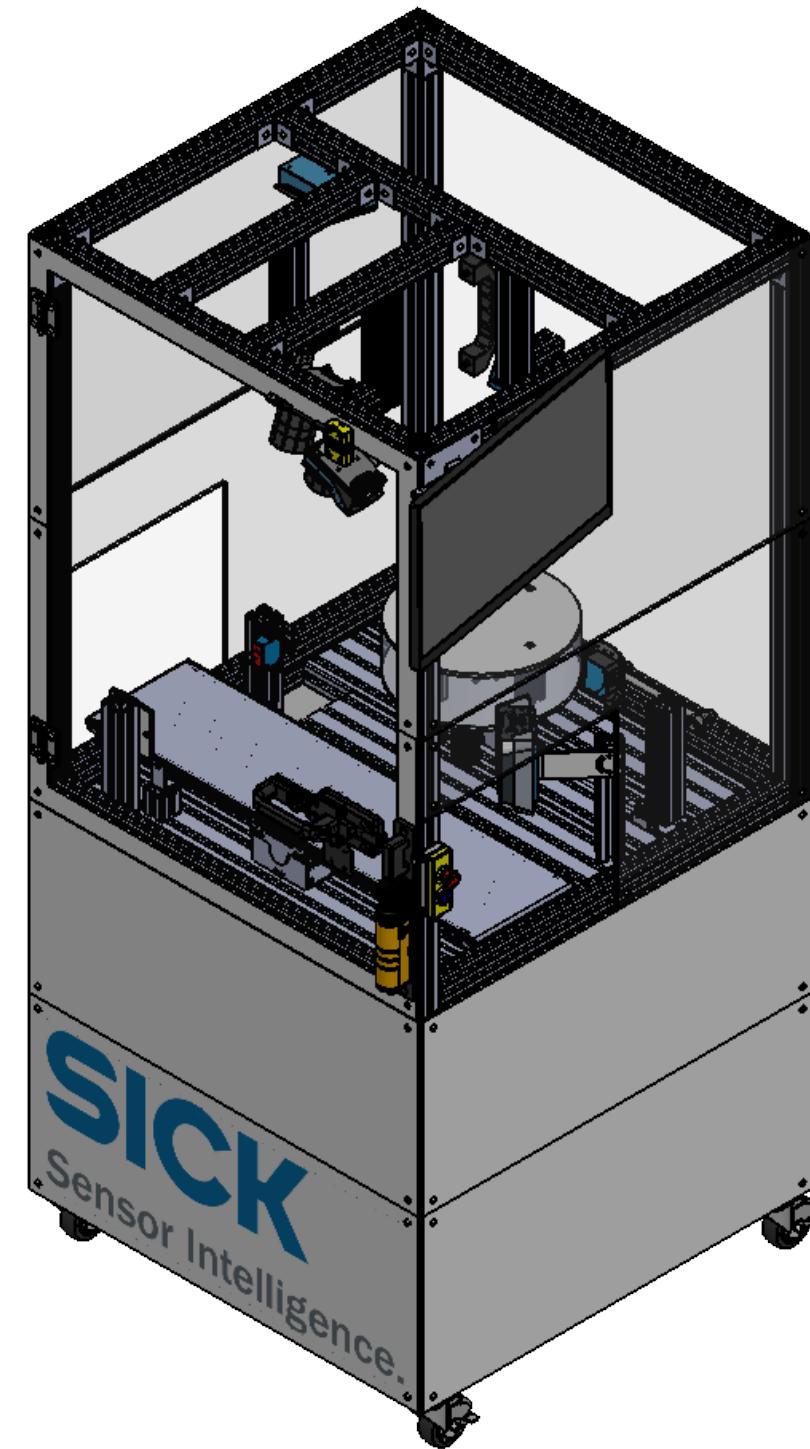
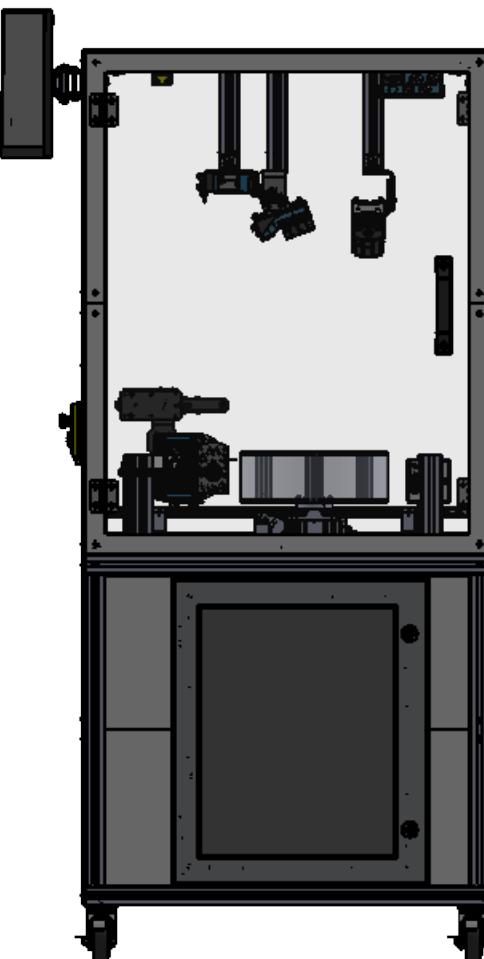
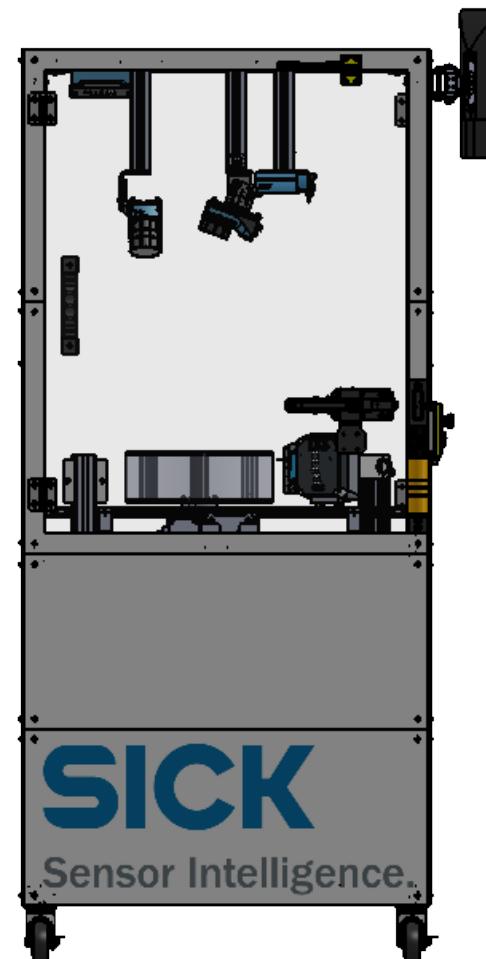
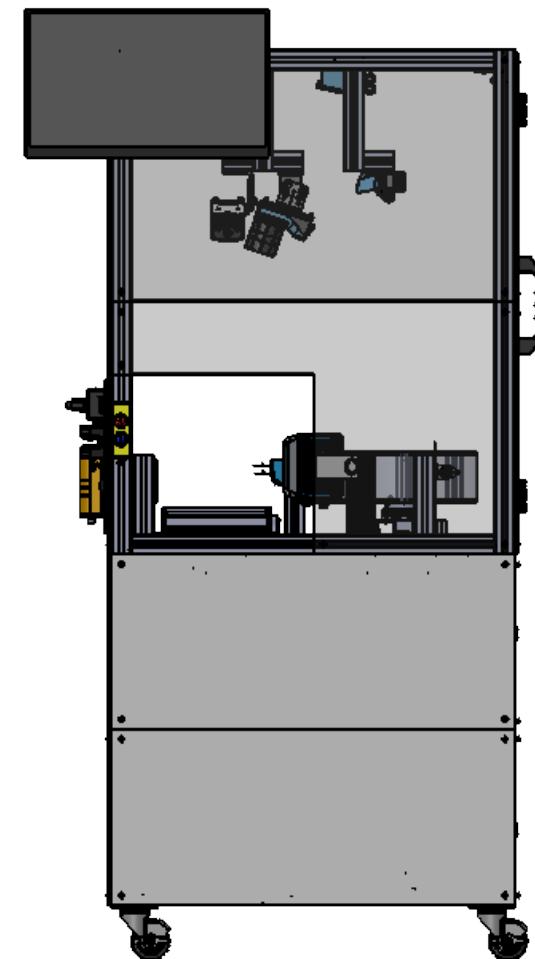


**MACHINE VISION
AND AUTO ID**

TABLE OF CONTENTS

SICK

Sensor Intelligence.

TOP VIEW**ISOMETRIC VIEW****BACK VIEW****FRONT VIEW****SIDE VIEW****TOLERANCE INFORMATION**UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

Faculty of Applied Sciences & Technology

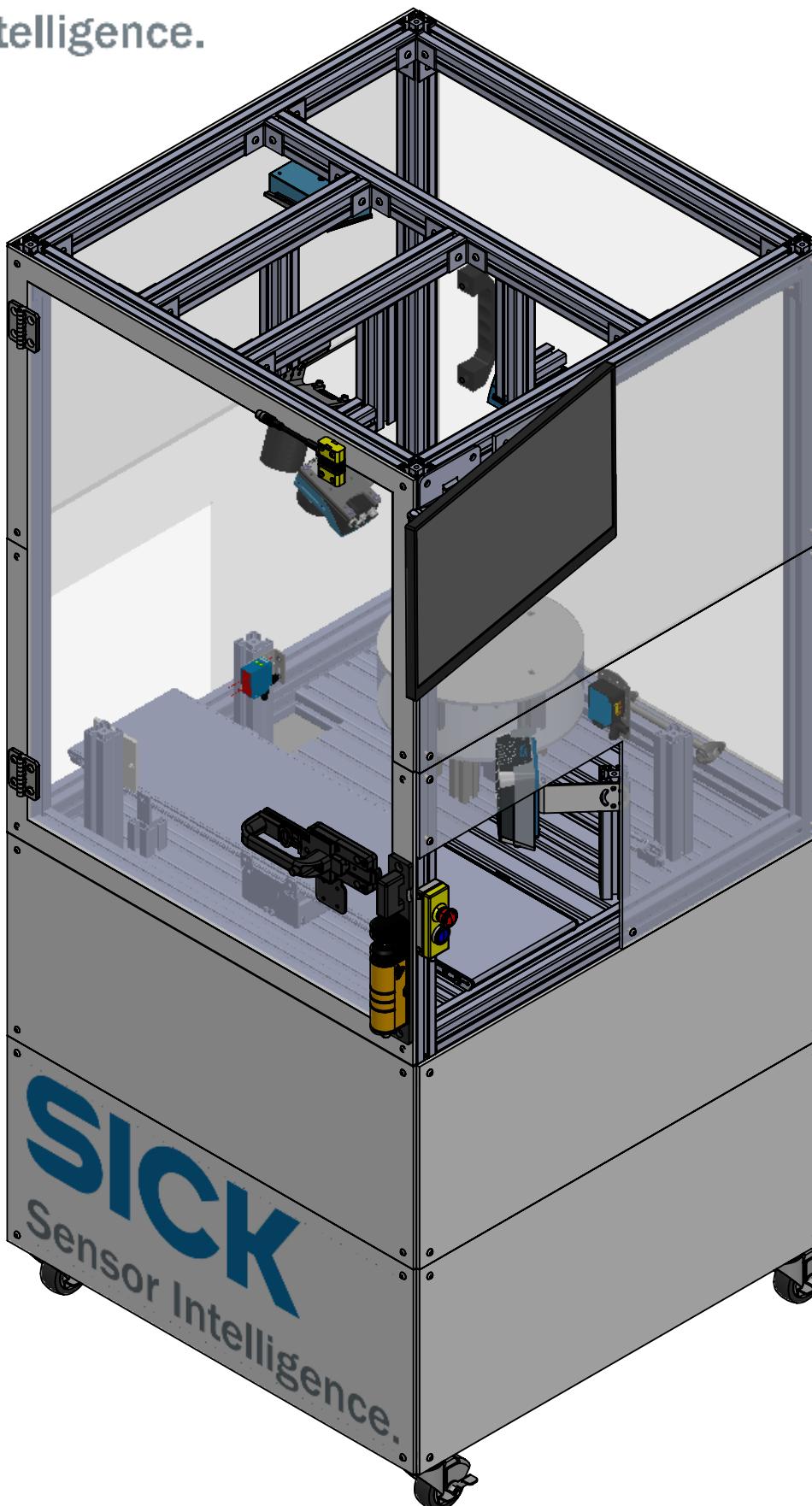
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MATERIAL:	N/A
HARDNESS:	N/A
DATE :	29/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**

COMPLETE CELL LAYOUT

SICK

Sensor Intelligence.

**OBJECT DETECTION:**

- OPERATOR RESETS THE CELL AND UNTOGGLES THE PHYSICAL E STOP IF REQUIRED AND MASTER START NEEDS TO BE PRESSED ON THE HMI TO ENERGIZE THE WHOLE CELL.
- THE CELL STARTS UP, THE CONVEYOR AND THE ROTARY ACTUATOR START RUNNING.
- THE OPERATOR CAN THEN USE THE HMI TO SELECT A PASTA TYPE TO LOAD ON THE CONVEYOR BELT, AS SOON AS THE ITEM IS SELECTED THE STE LOGIC IS ACTIVATED AND WAITING FOR THE PASTA TO BREAK THE PHOTOBEAM.
- ONCE THE PHOTOBEAM IS BROKEN, INSPECTOR TAKES A PICTURE OF THE ITEM AND THE DEEP LEARNING MODEL ONBOARD COMPARES IT TO THE INPUT JOB ID AND GIVES A RESULT.
- IF THE ITEM FAILS EVALUATION, LECTOR TRIGGERS BUT DOES NOT STORE BARCODE DATA AND GOES AHEAD TO RFU WHICH READS THE RFID DATA AND THEN REVERSES THE CONVEYOR DIRECTION BACK TO THE PHOTOEYE AND STOPS THE CONVEYOR AS SOON AS THE PHOTOEYE IS BROKEN AGAIN.
- IF THE ITEM PASSES EVALUATION TEHN LECTOR COLLECTS AND STORES THE BARCODE DATA FOR THE DATABASE AND THEN THE CONVEYOR IS ENABLED TO GO FORWARD TILL THE RFID DATA IS COLLECTED, WHICH THEN STOPS THE CONVEYOR.

ROTARY OPERATION:

- OPERATOR RESETS THE CELL AND UNTOGGLES THE PHYSICAL E STOP IF REQUIRED AND MASTER START NEEDS TO BE PRESSED ON THE HMI TO ENERGIZE THE WHOLE CELL.
- THE CELL STARTS UP, THE CONVEYOR AND THE ROTARY ACTUATOR START RUNNING.
- THE CONTRAST SENSOR KEEPS TRIGGERING AT THE SET COLOR EVERY REVOLUTION.
- THE OPERATOR CAN THEN TOGGLE A 'START READ' BUTTON ON THE HMI WHICH TRIGGERS CLV TO READ THE BARCODE DATA ON THE TOP PLATE OF THE ROTARY TABLE.
- ONCE THE BARCODE DATA IS COLLECTED, IT IS THEN STORED INSIDE A VARIABLE THAT CAN BE DISPLAYED ON THE HMI.

TOLERANCE INFORMATIONUNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

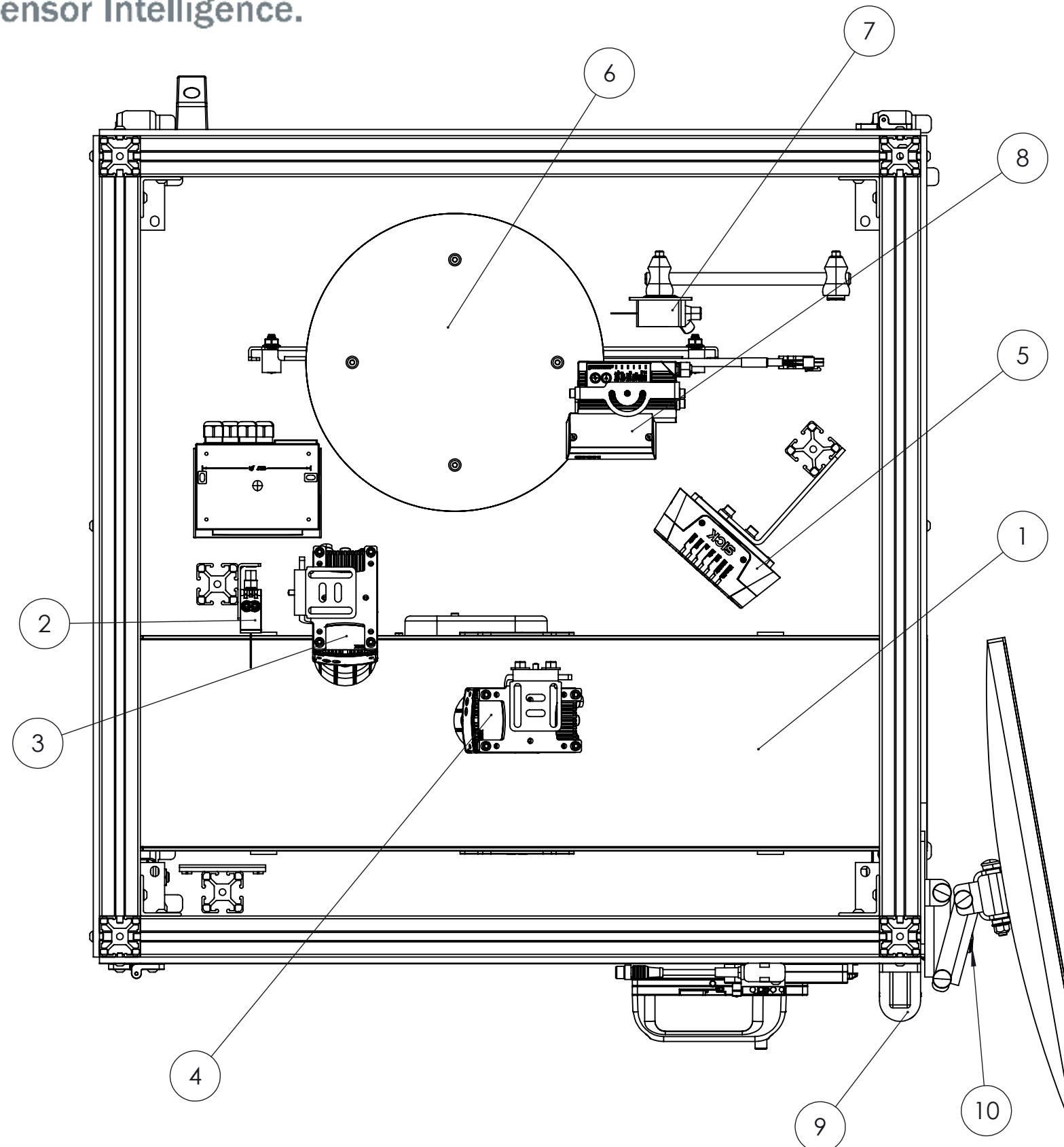
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HARDNESS:	N/A	
DATE :	18/3/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
HUMBER Faculty of Applied Sciences & Technology	JOB NO : N/A	SCALE: 1:9
	ITEM NO : N/A	REV : 3
	QUANTITY: 1	Sheet: 2 OF: 20

**MACHINE VISION
AND AUTO ID**

SEQUENCE OF OPERATION

SICK

Sensor Intelligence.



COMPONENT NUMBER	COMPONENT NAME	DESCRIPTION
1	DORNER CONVEYOR BELT	MID DRIVE CONVEYOR BELT
2	PHOTOEYE	DISTANCE SENSOR
3	INSPECTOR P63X	2D MACHINE VISION CAMERA - WITH DEEP LEARNING ABILITIES
4	LECTOR P63	2D BARCODE SCANNER
5	RFU 620	RFID READ/WRITE DEVICE(UHF)
6	ROTARY TABLE	EQUIPPED WITH A ORIENTAL MOTOR HOLLOW ROTARY ACTUATOR
7	KTS PRIME	CONTRAST SENSOR
8	CLV 650	HIGH SPEED BARCODE SCANNER
9	FLEXI LOCK	ELECTROMECHANICAL INTERLOCK
10	ESTOP - RESET BLOCK	PHYSICAL ESTOP AND RESET BUTTONS

TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

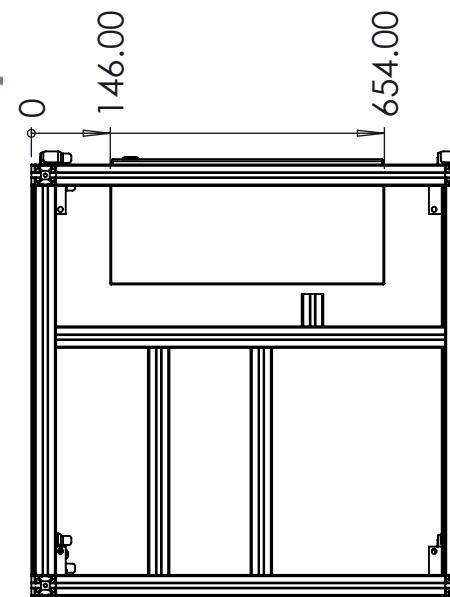
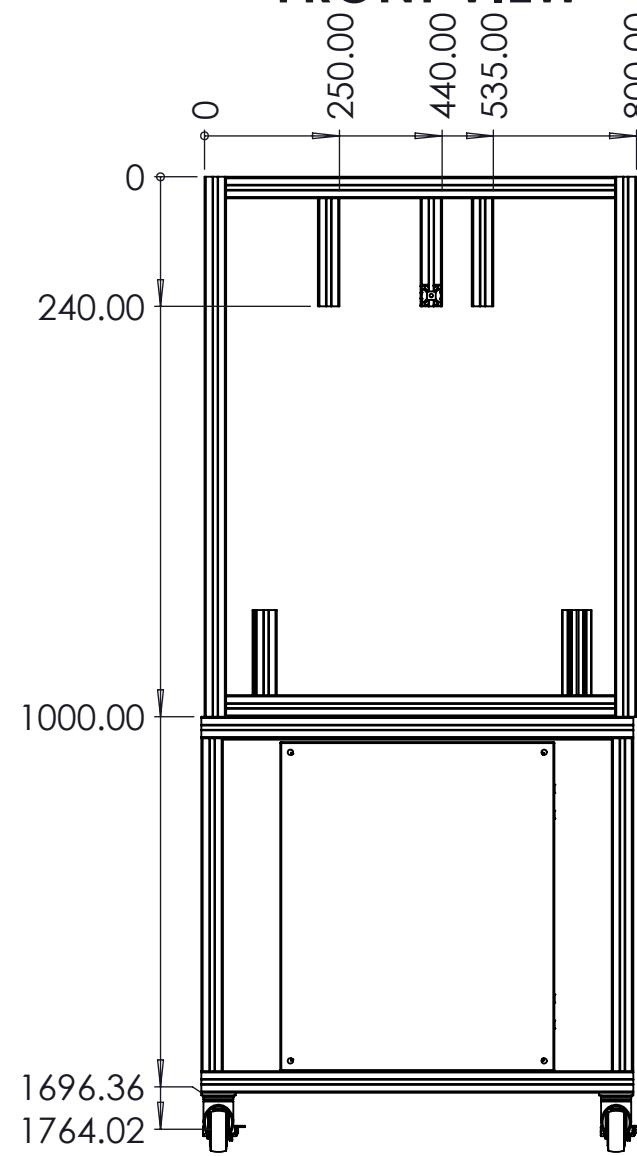
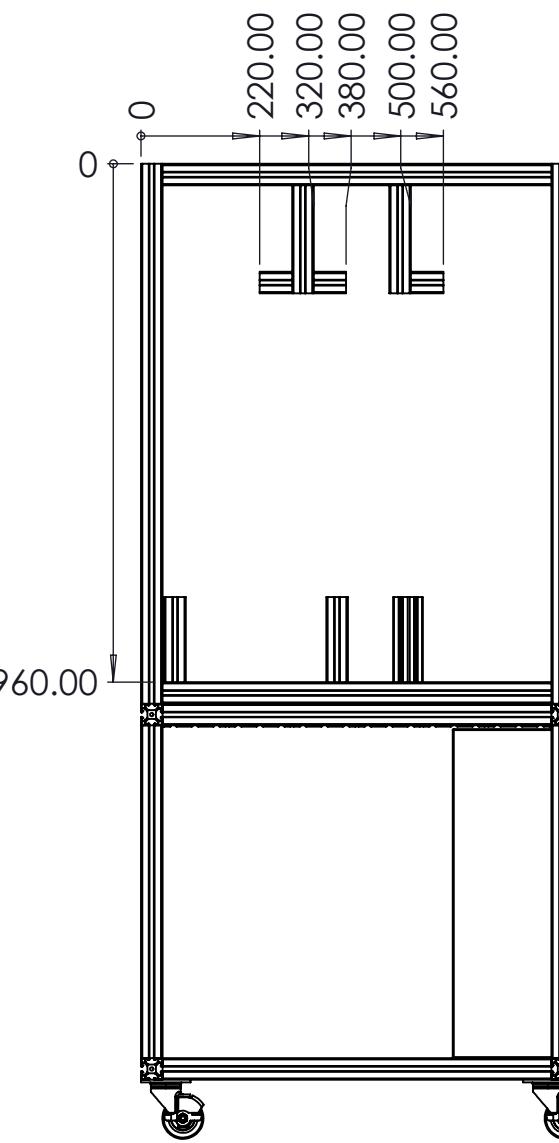
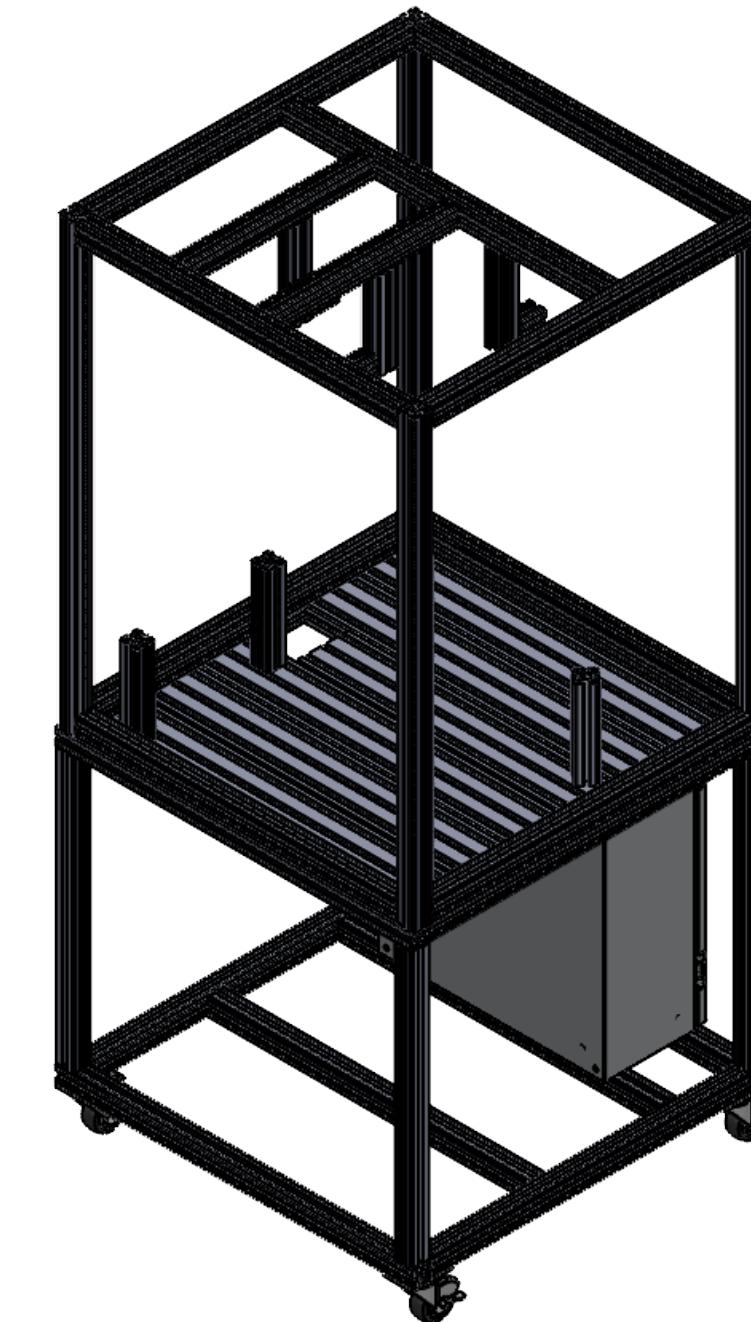
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MATERIAL:	N/A
HARDNESS:	N/A
DATE :	9/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON
JOB NO :	N/A
ITEM NO :	N/A
QUANTITY:	1
SCALE:	1:5
REV :	3
HEET:	3
OF:	20

MACHINE VISION AND AUTO ID

MAJOR COMPONENTS

SICK

Sensor Intelligence.

TOP VIEW**FRONT VIEW****RIGHT VIEW****ISOMETRIC VIEW****TOLERANCE INFORMATION**UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

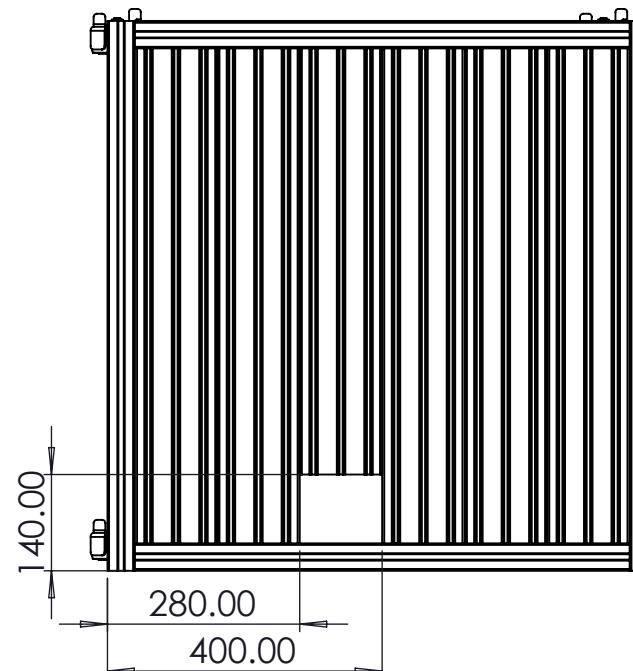
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DATE :	9/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**CELL FRAME
WITH ELECTRIC PANEL

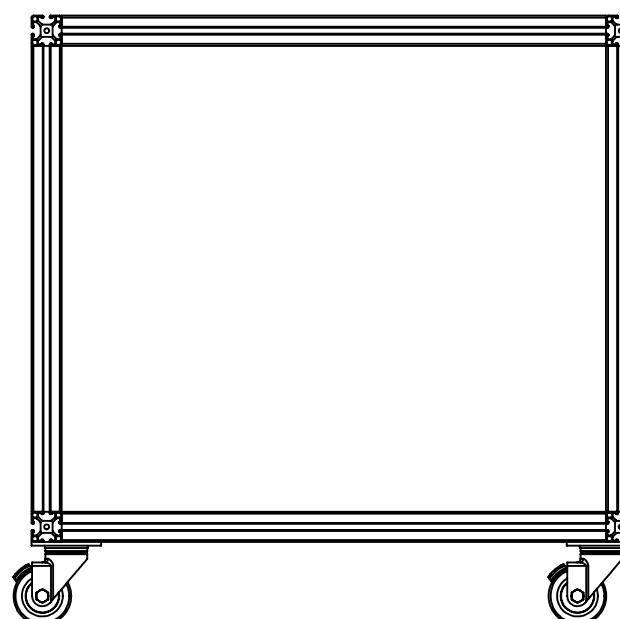
SICK

Sensor Intelligence.

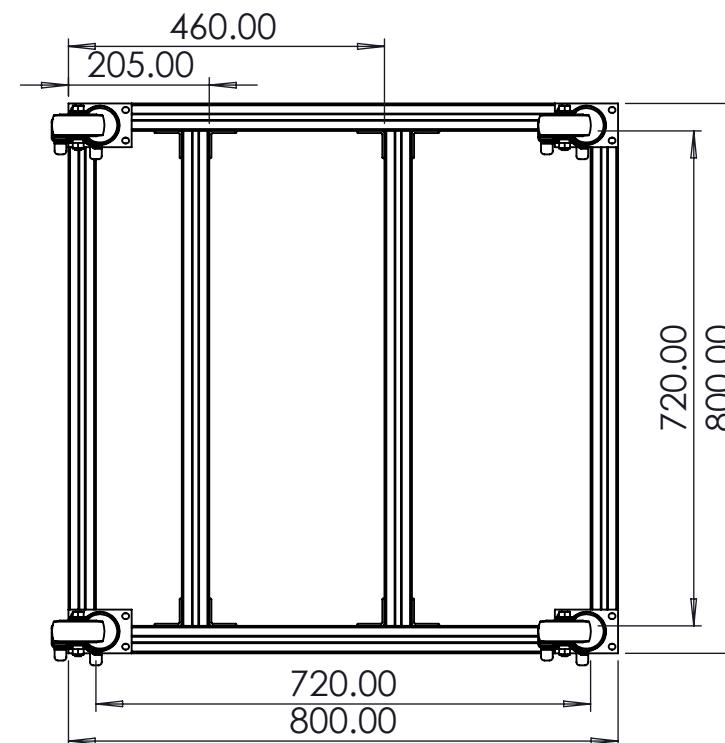
TOP VIEW



RIGHT VIEW



BOTTOM VIEW



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800x800MM BASE	BASE MADE OF ALUMINUM EXTRUSIONS	1
2	40-4012-620-CL	620mm - 40x120 Aluminum Base Extrusion	1
3	40-4012-720-CL	720mm - 40x120 Aluminum Base Extrusion	5
4	616.36MM ALUMINUM EXTRUSION	40X40 ALUMINUM EXTRUSION LEGS FOR CELL BASE	4
5	800MM ALUMINUM EXTRUSION	40x40 ALUMINUM EXTRUSION	2
6	720MM ALUMINUM EXTRUSION	40x40 ALUMINUM EXTRUSION	4
7	8359T231	CORROSION-RESISTANT CASTER	4
8	35x39.8MM BRACKET	L BRACKET	8



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

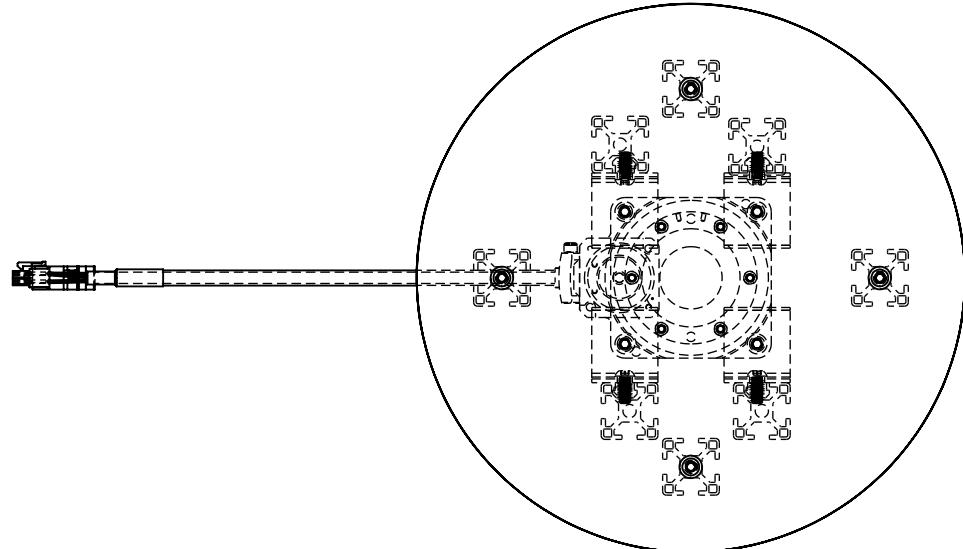
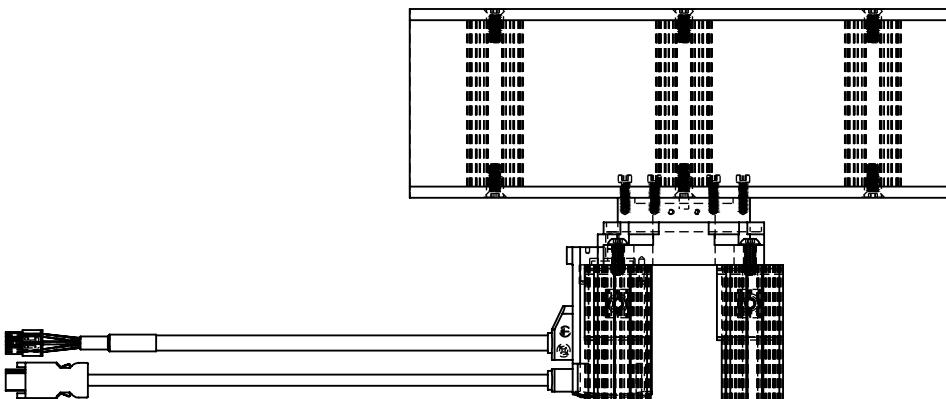
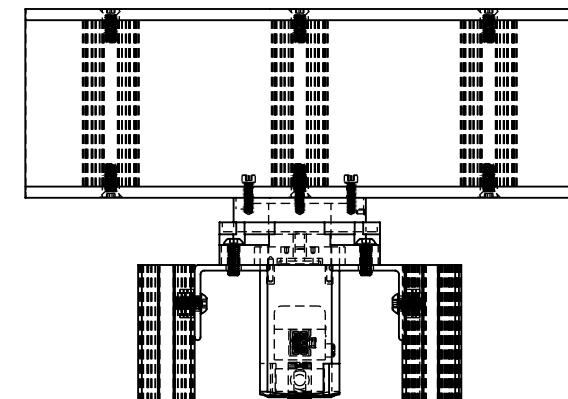
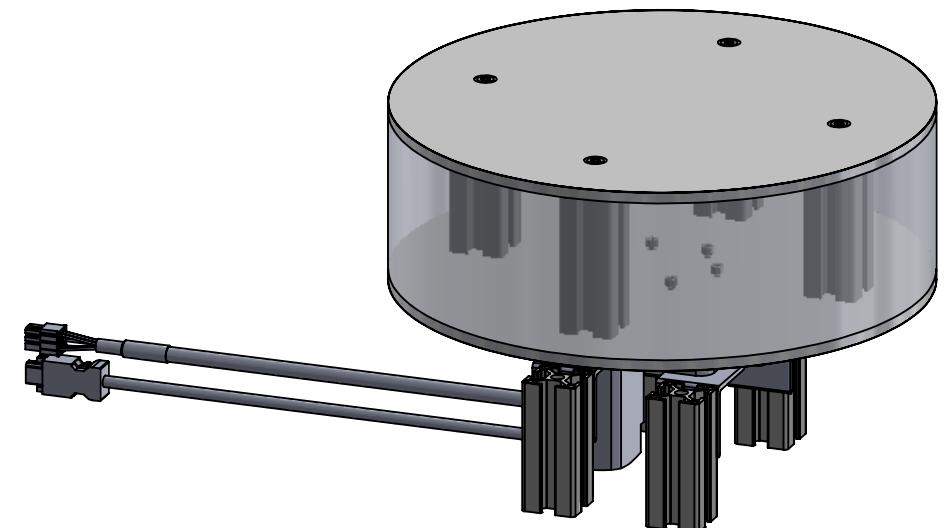
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MATERIAL:	ALUMINUM EXTRUSION
HARDNESS:	N/A
DATE :	9/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON
JOB NO :	N/A
SCALE:	1:11
ITEM NO :	N/A
REV :	2
QUANTITY:	1
SHEET:	5 OF: 20

**MACHINE VISION
AND AUTO ID**

CELL BASE STRUCTURE

SICK

Sensor Intelligence.

TOP VIEW**FRONT VIEW****SIDE VIEW****DIMETRIC VIEW**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Rotary Table Top Plate	Rotary Table Top Plate	1
2	Rotary Table Plate - Bottom Plate	Rotary Table Plate - Bottom Plate	1
3	91294A239	Black-Oxide Alloy Steel Hex Drive Flat Head Screw	8
4	dgm85r-azac	Hollow Rotary Actuator	1
5	Color Strip Rotory	Color Strip for KTS Prime Training	1
6	91290A154	Alloy Steel Socket Head Screw	6
7	L Bracket 35x39.8mm	L Bracket for Actuator Mounting	4
8	92095A238	Button Head Hex Drive Screw	4
9	92095A227	Button Head Hex Drive Screw	4
10	6000N204	T-Slotted Framing Fasteners	4
11	5537T738	T-Slotted Framing	4
12	5537T738	T-Slotted Framing	4

TOLERANCE INFORMATIONUNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

Faculty of Applied Sciences & Technology

PART NUMBER:

MATERIAL:

N/A

HARDNESS:

N/A

DATE :

10/3/2024

DRAWN : PREMANSHU BHAGAT

APPROVED: JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**

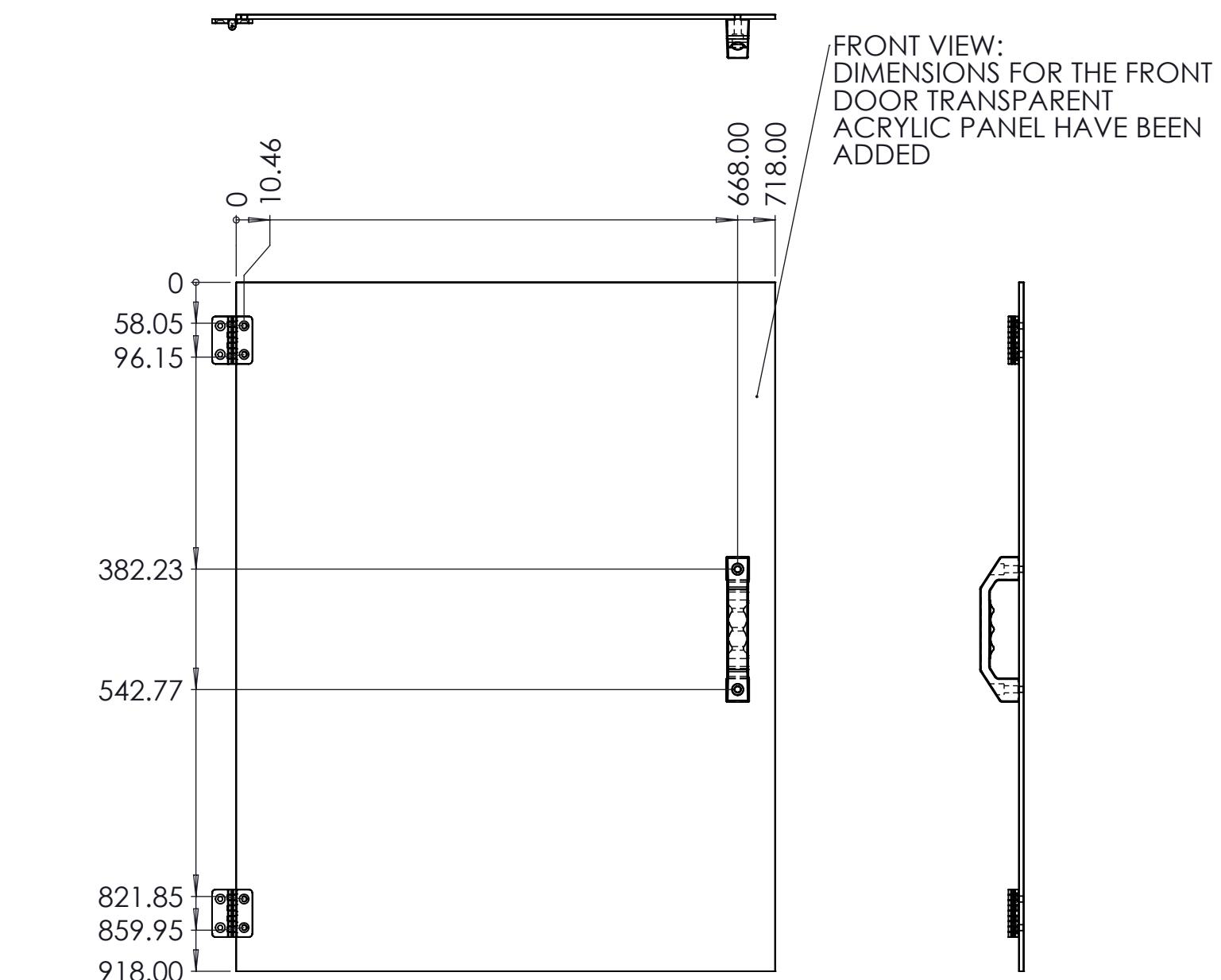
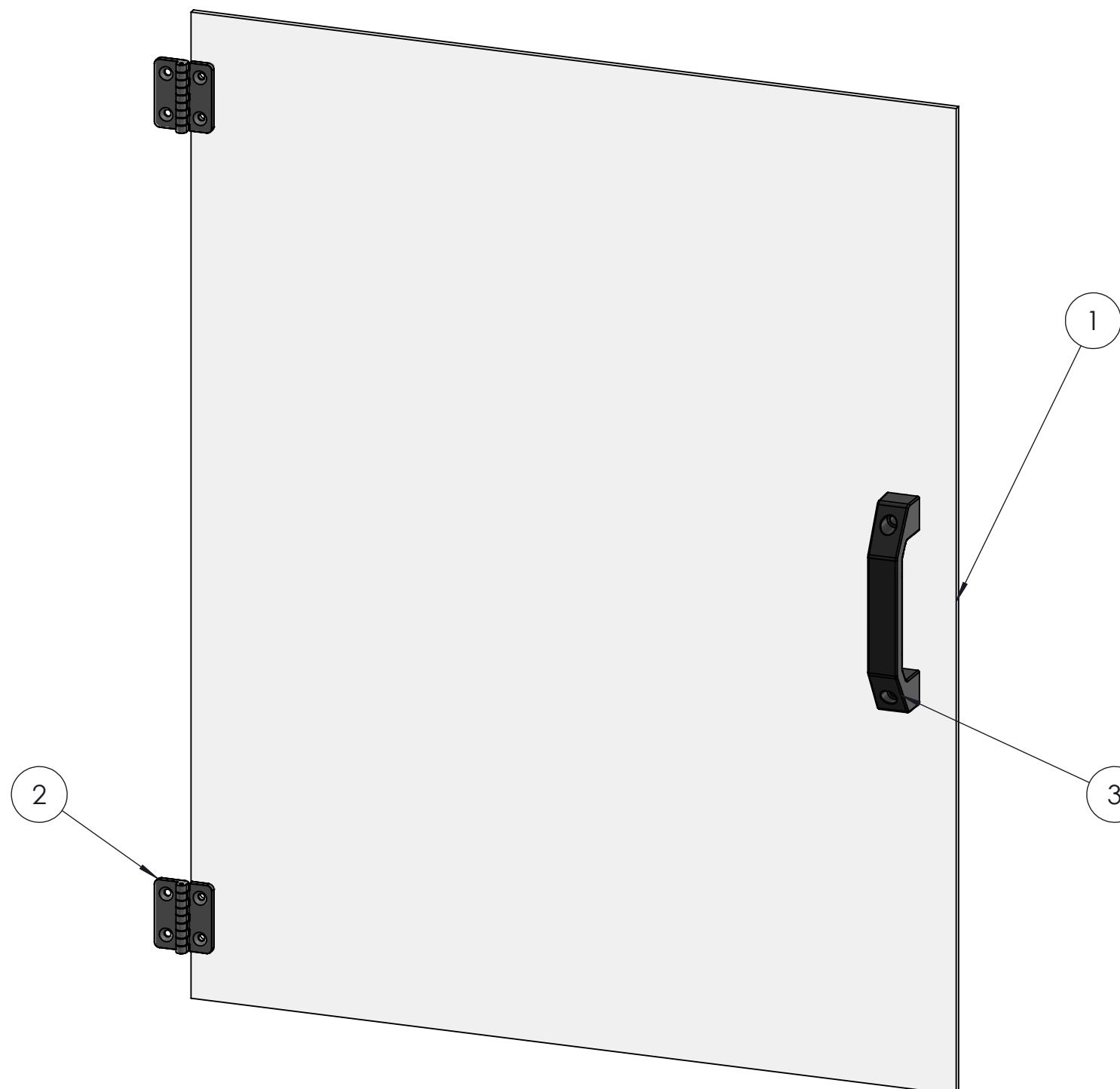
Rotary Table Assembly

JOB NO :	N/A	SCALE:	1:4	B
ITEM NO :	N/A	REV :	5	
QUANTITY:	1	Sheet:	6 OF: 20	

SICK

Sensor Intelligence.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Back Door Panel	Transparent Acrylic Panel	1
2	1635A501	Plastic Hinge with Holes	2
3	2471N4	Static-Control Unthreaded-Hole Pull Handle	1

**TOLERANCE INFORMATION**UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

Faculty of Applied Sciences & Technology

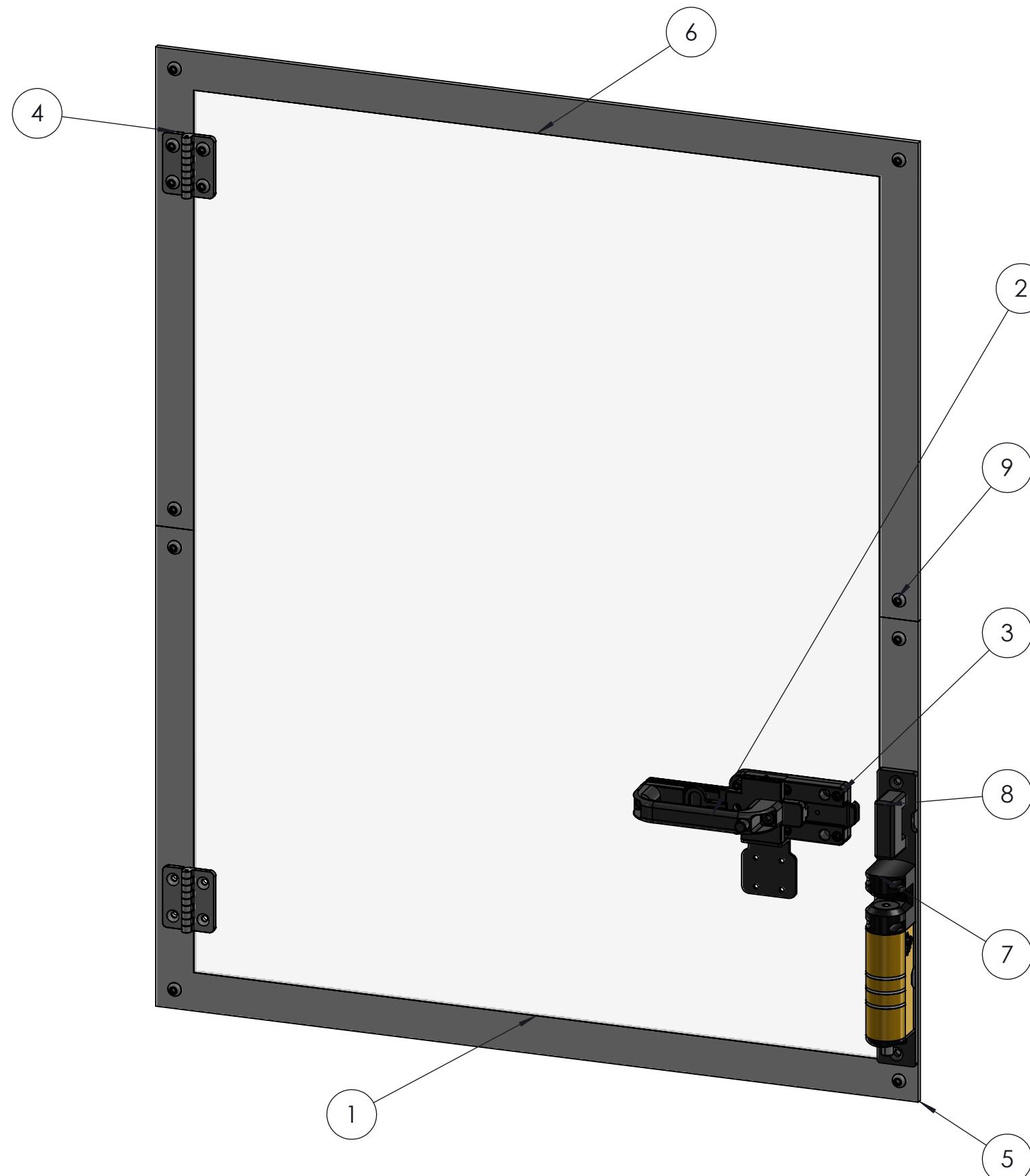
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HARDNESS:	N/A
FINISH :	10/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON
JOB NO : N/A SCALE: 1:5	
ITEM NO:	N/A REV : 2
QUANTITY:	1 SHEET: 7 OF: 20

**MACHINE VISION
AND AUTO ID**

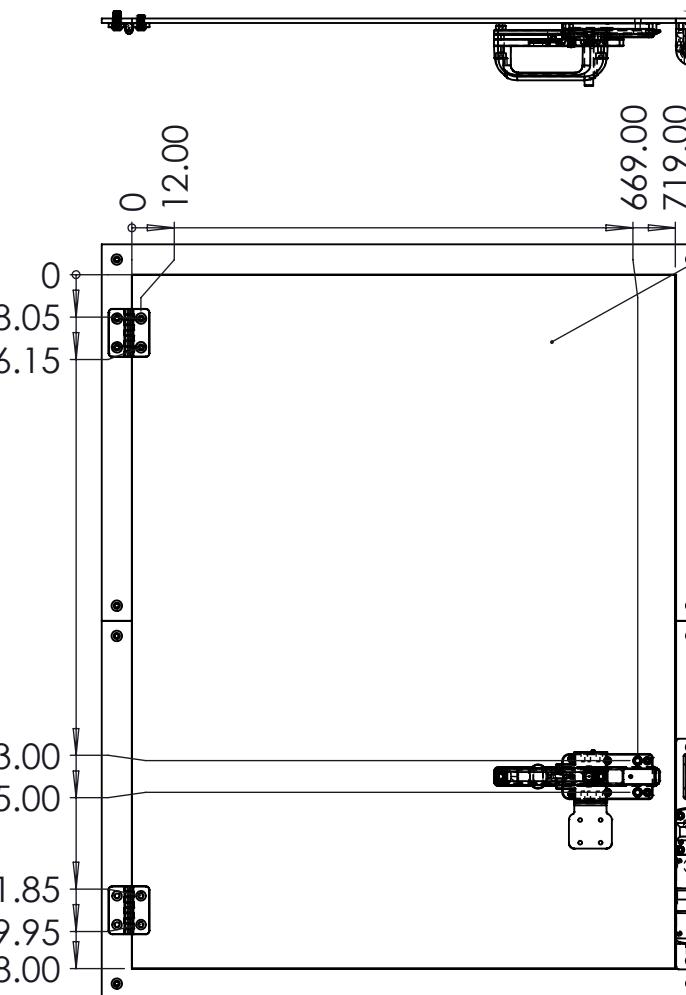
Back Door Assembly

SICK

Sensor Intelligence.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FRONT PANEL	TRANSPARENT ACRYLIC PANEL	1
3	Key Part of Lock - Part 1	HANDLE PORTION OF THE DOOR	1
3	Key Part of Lock - Part2	ACTUAL KEY FOR THE INTERLOCK	1
4	1635A501	Plastic Hinge with Holes	2
5	Front Acrylic Frame	WHITE ACRYLIC FRAME 6MM	1
6	Front Acrylic Frame	WHITE ACRYLIC FRAME 6MM	1
7	SICK flexLock - Door Lock	ELECTROMECHANICAL INTERLOCK	1
8	Base of Lock - Split2	KEY FIT	1
9	92095A260	Button Head Hex Drive Screw	12



FRONT VIEW:
DIMENSION FOR THE
FRONT DOOR PANEL
HAVE BEEN ADDED

TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

HUMBER
Faculty of Applied Sciences & Technology

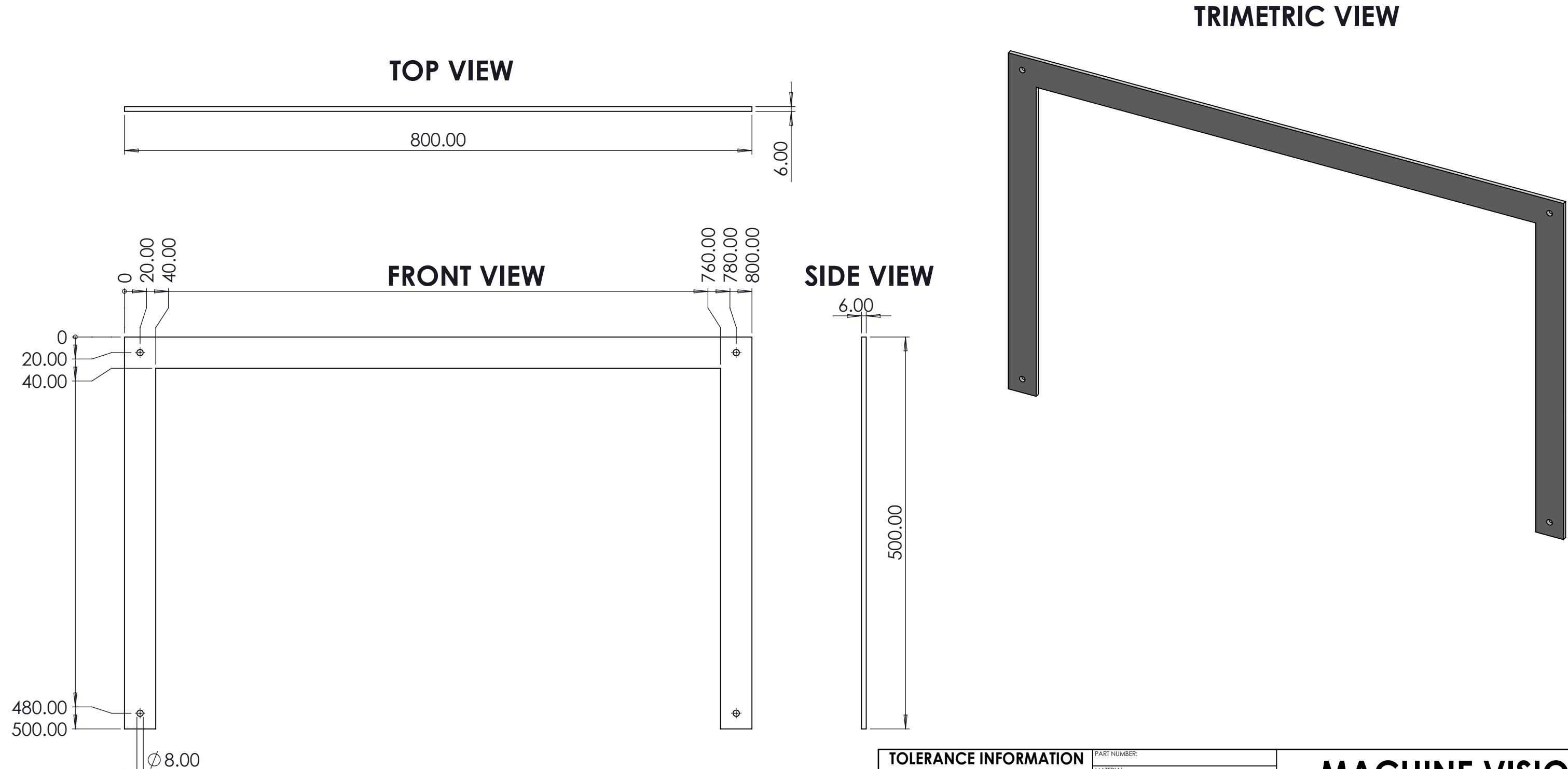
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MATERIAL:	N/A	
HARDNESS:	N/A	
DATE:	10/3/2024	
DRAWN:	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB NO :	N/A	SCALE: 1:5
ITEM NO :	N/A	REV : 2
QUANTITY:	1	Sheet: 8 Of: 20

MACHINE VISION AND AUTO ID

FRONT DOOR ASSEMBLY

SICK

Sensor Intelligence.



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

PART NUMBER:

MATERIAL: WHITE ACRYLIC

HARDNESS: N/A

DATE : 15/3/2024

DRAWN : PREMANSHU BHAGAT

APPROVED: JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**

ACRYLIC FRAME
TOP SIDE

JOB NO : N/A SCALE: 1:5

ITEM NO : N/A REV : 2

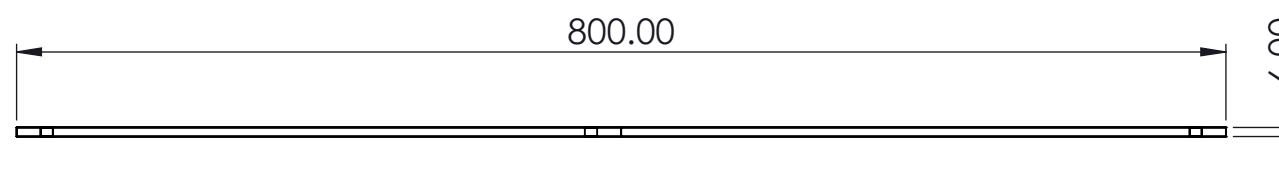
QUANTITY: 2 SHEET: 9 OF: 20

B

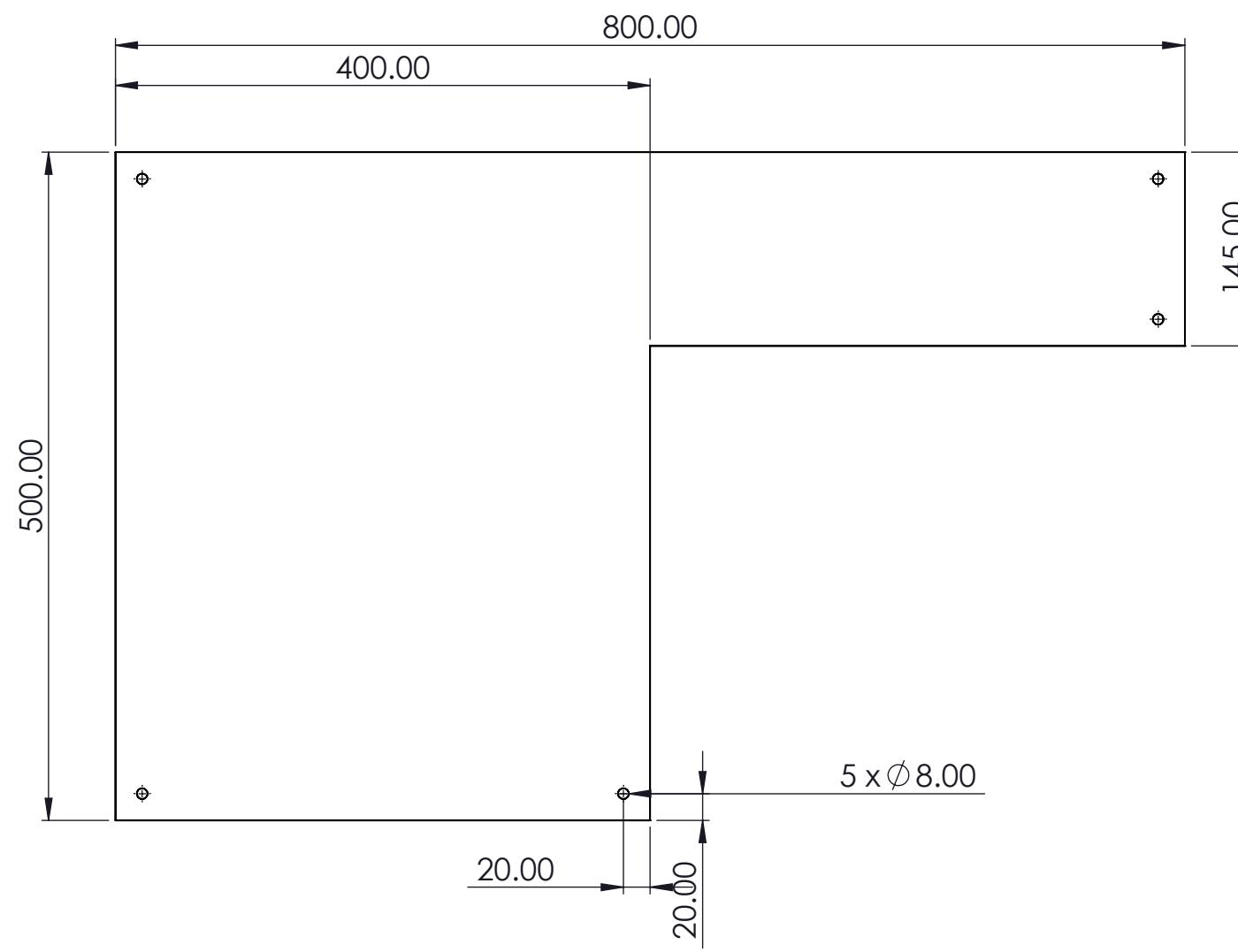
SICK

Sensor Intelligence.

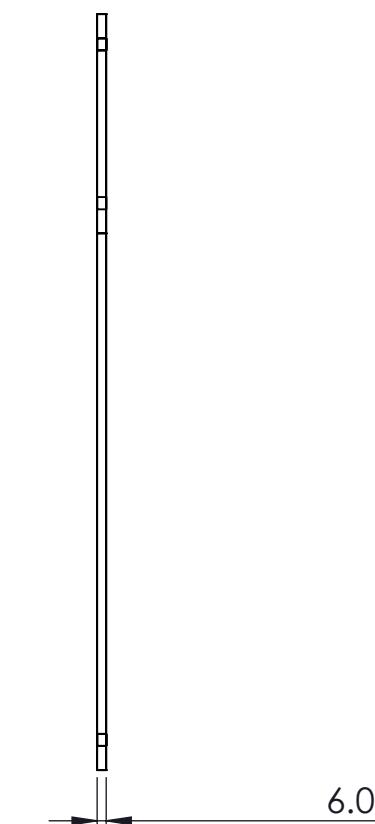
TOP VIEW



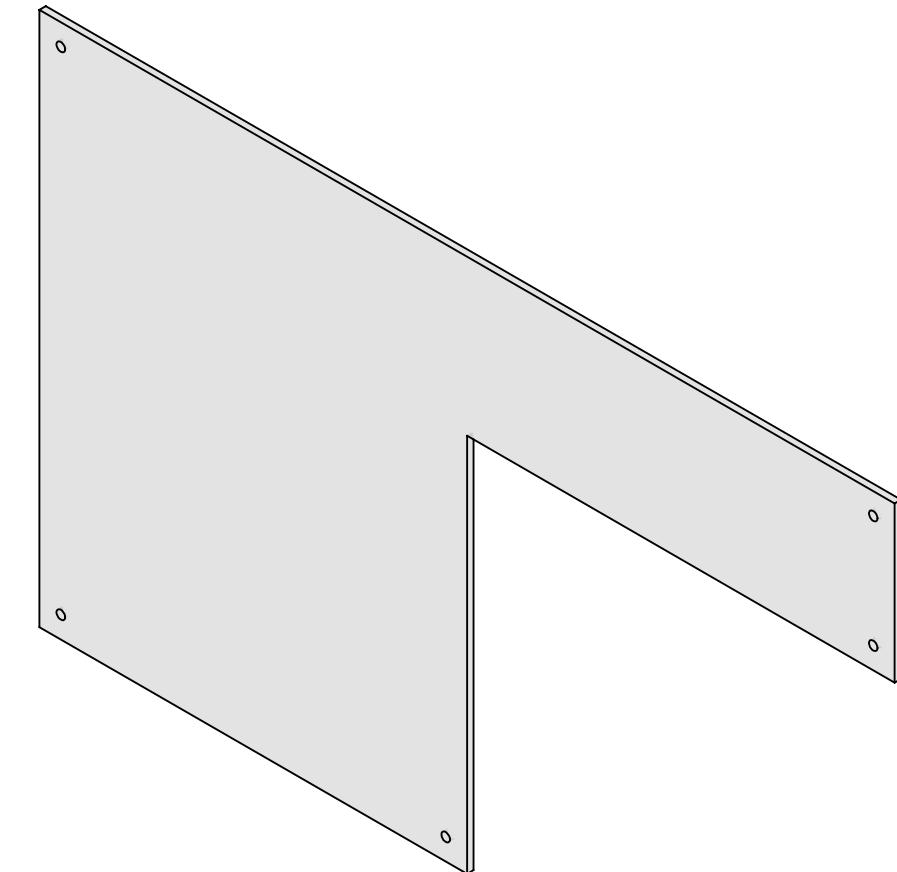
FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

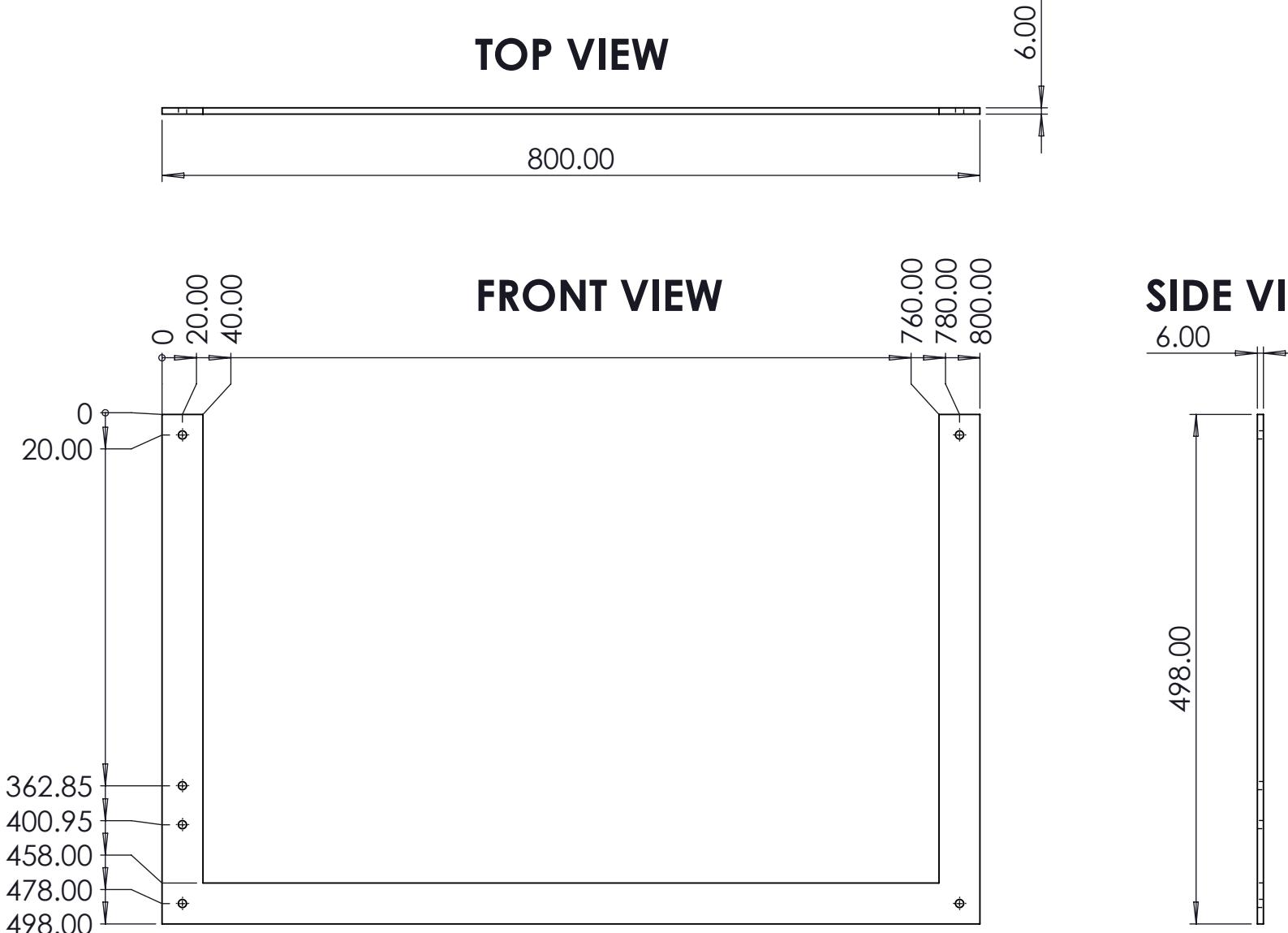
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HARDNESS:	N/A		
DATE :	12/2/2024		
DRAWN :	PREMANSHU BHAGAT		
APPROVED:	JOSHUA GALTON		
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ITEM NO :	N/A	REV :	3
QUANTITY:	2	SHEET:	10 OF: 20

MACHINE VISION AND AUTO ID

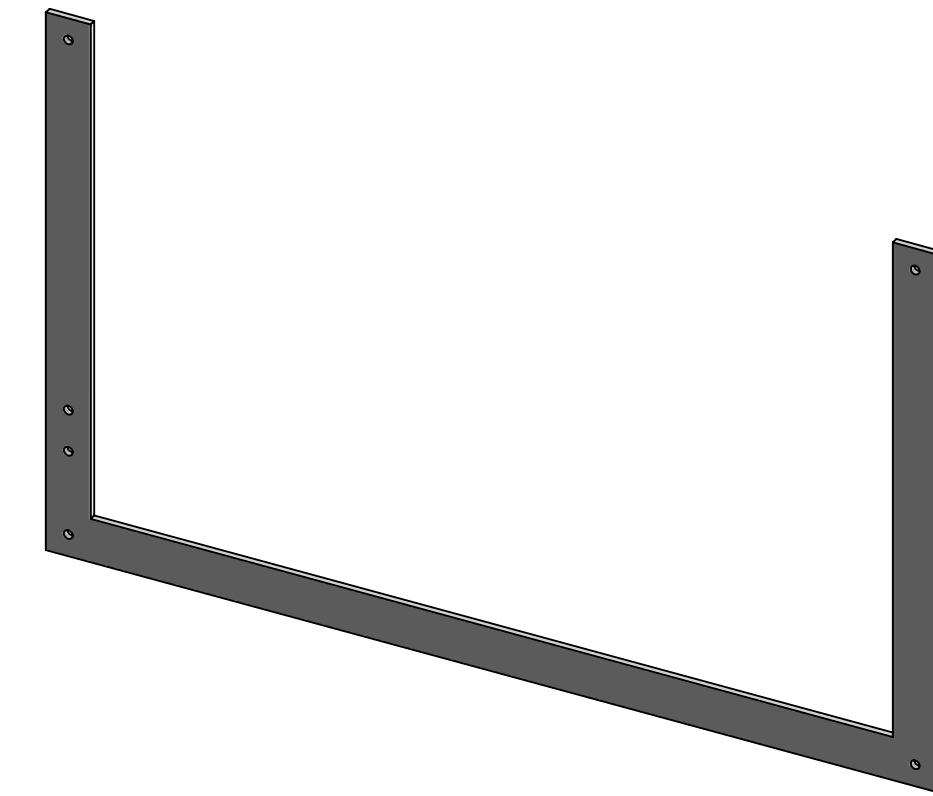
ACRYLIC PANEL
CONVEYOR PASS THROUGH

SICK

Sensor Intelligence.



TRIMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

PART NUMBER:

MATERIAL: WHITE ACRYLIC

HARDNESS: N/A

DATE : 11/2/2024

DRAWN : PREMANSHU BHAGAT

APPROVED: JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**

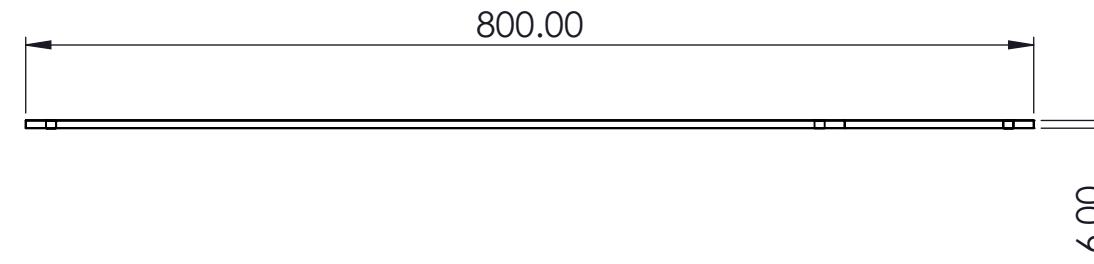
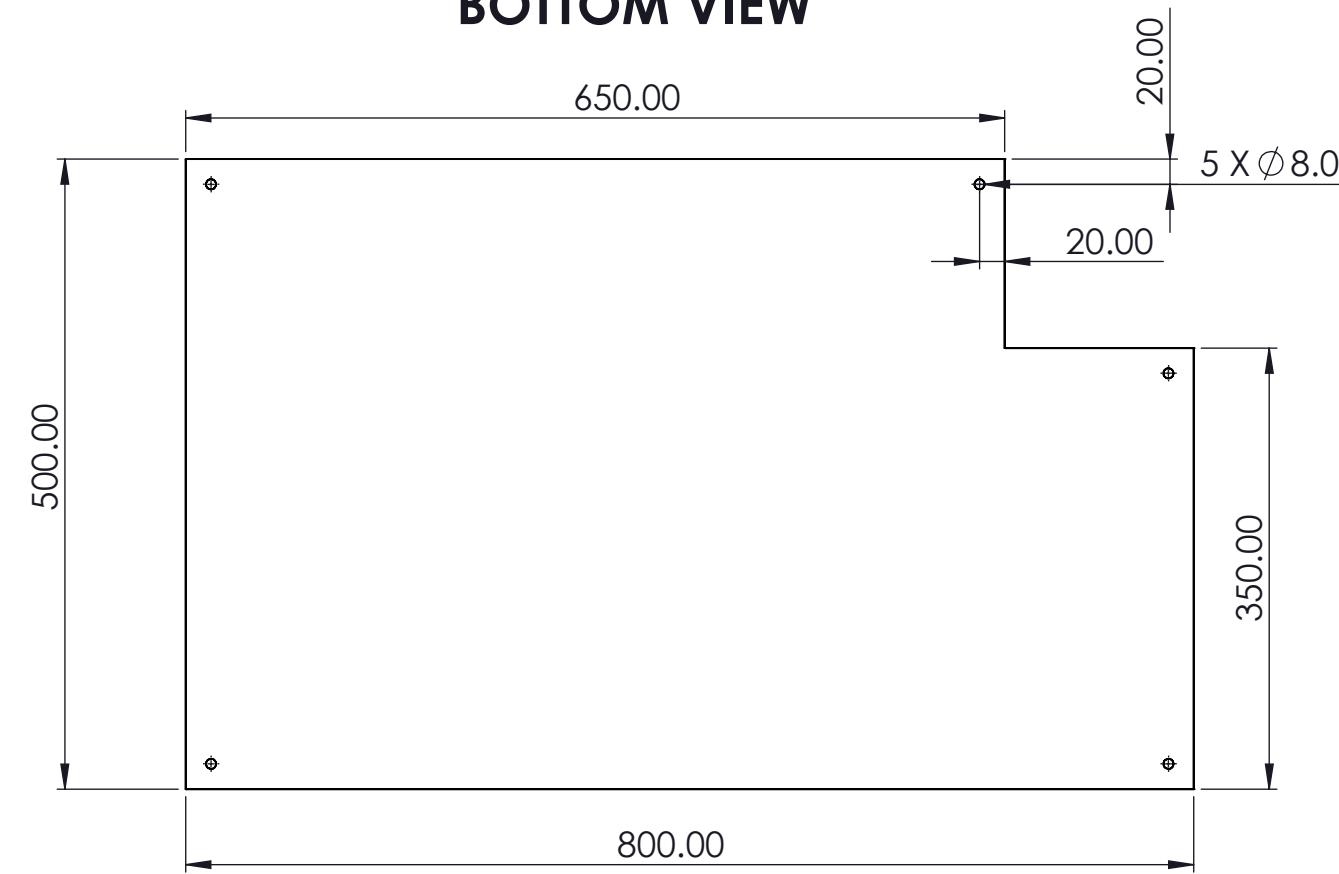
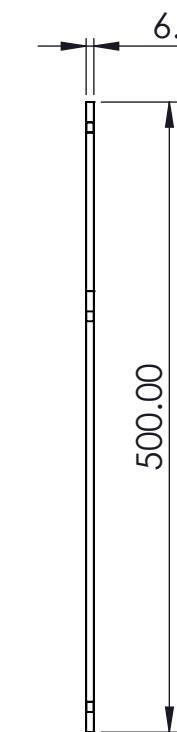
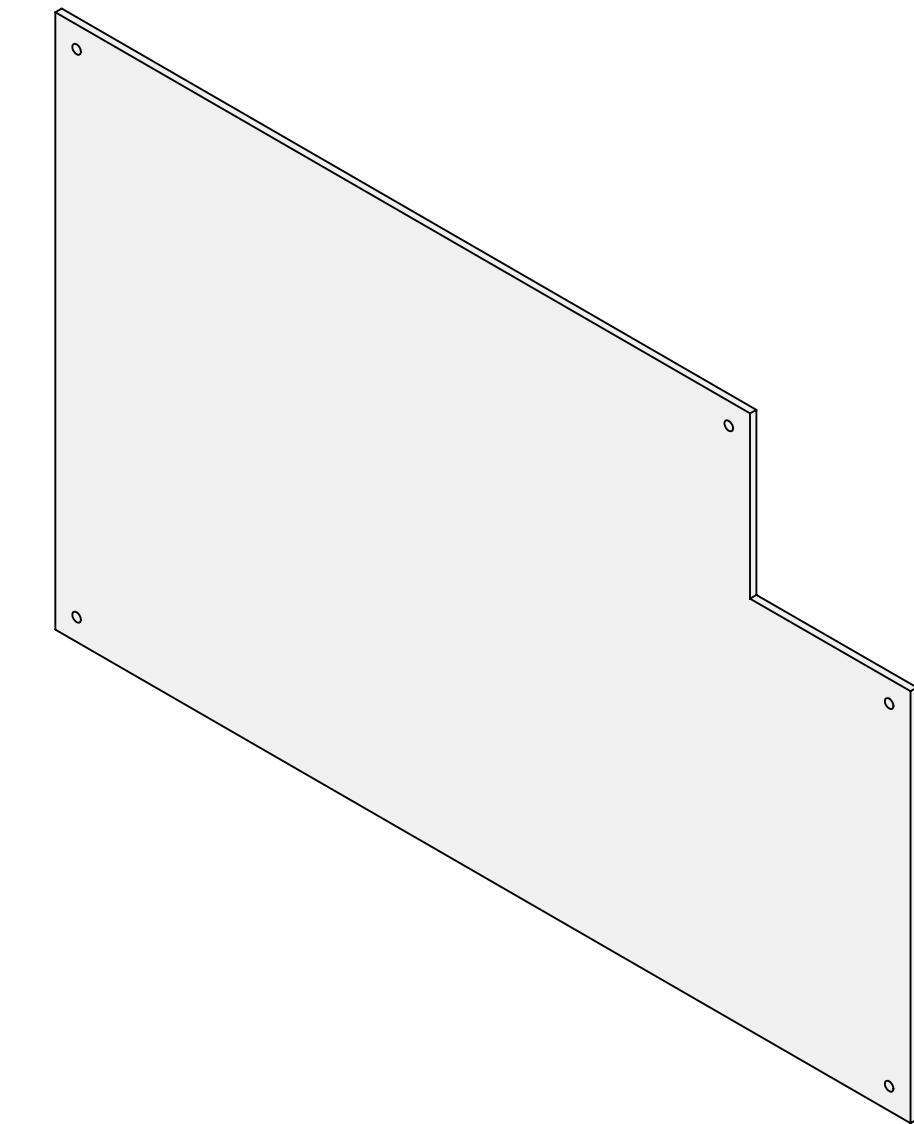
ACRYLIC FRAME
FOR HINGES

JOB NO : N/A SCALE: 1:6

ITEM NO : N/A REV : 2

QUANTITY: 3 SHEET: 11 OF: 20

B

TOP VIEW**BOTTOM VIEW****SIDE VIEW****ISOMETRIC VIEW**

TOLERANCE INFORMATION UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND THE TOLERANCES ARE:			PART NUMBER:
FRACTIONS 1/64	DECIMALS .XXX = ± .0005" .XX = ± .005" .X = ± .01"	ANGLES X° = ± 0°15' X.X° = ± 0°05'	MATERIAL: TRANSPARENT ACRYLIC
			HARDNESS: N/A
			DATE : 11/2/2024
			DRAWN : PREMANSHU
			APPROVED: JOSHUA
THIRD ANGLE PROJECTION			
HUMBER Faculty of Applied Sciences & Technology			JOB NO : N/A SCALE: 1:5 B
ITEM NO : N/A REV : 1			QUANTITY: 1 SHEET: 12 OF: 20

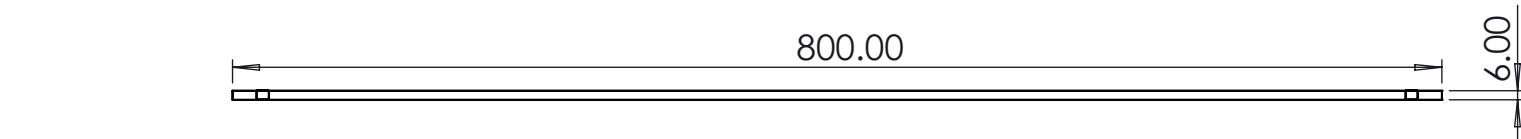
**MACHINE VISION
AND AUTO ID**
**ACRYLIC PANEL
BELOW MONITOR**

SICK

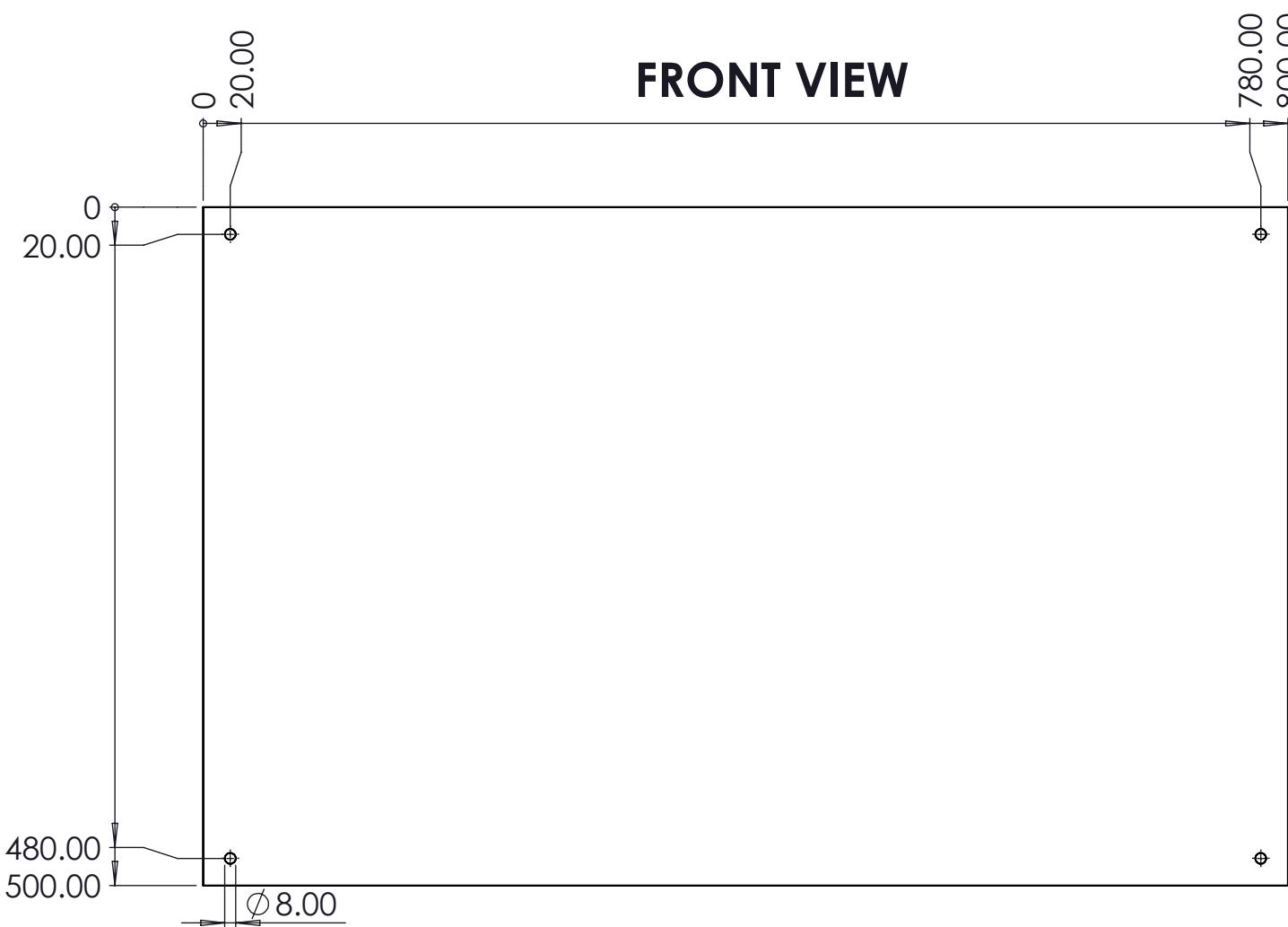
Sensor Intelligence.

TRIMETRIC VIEW

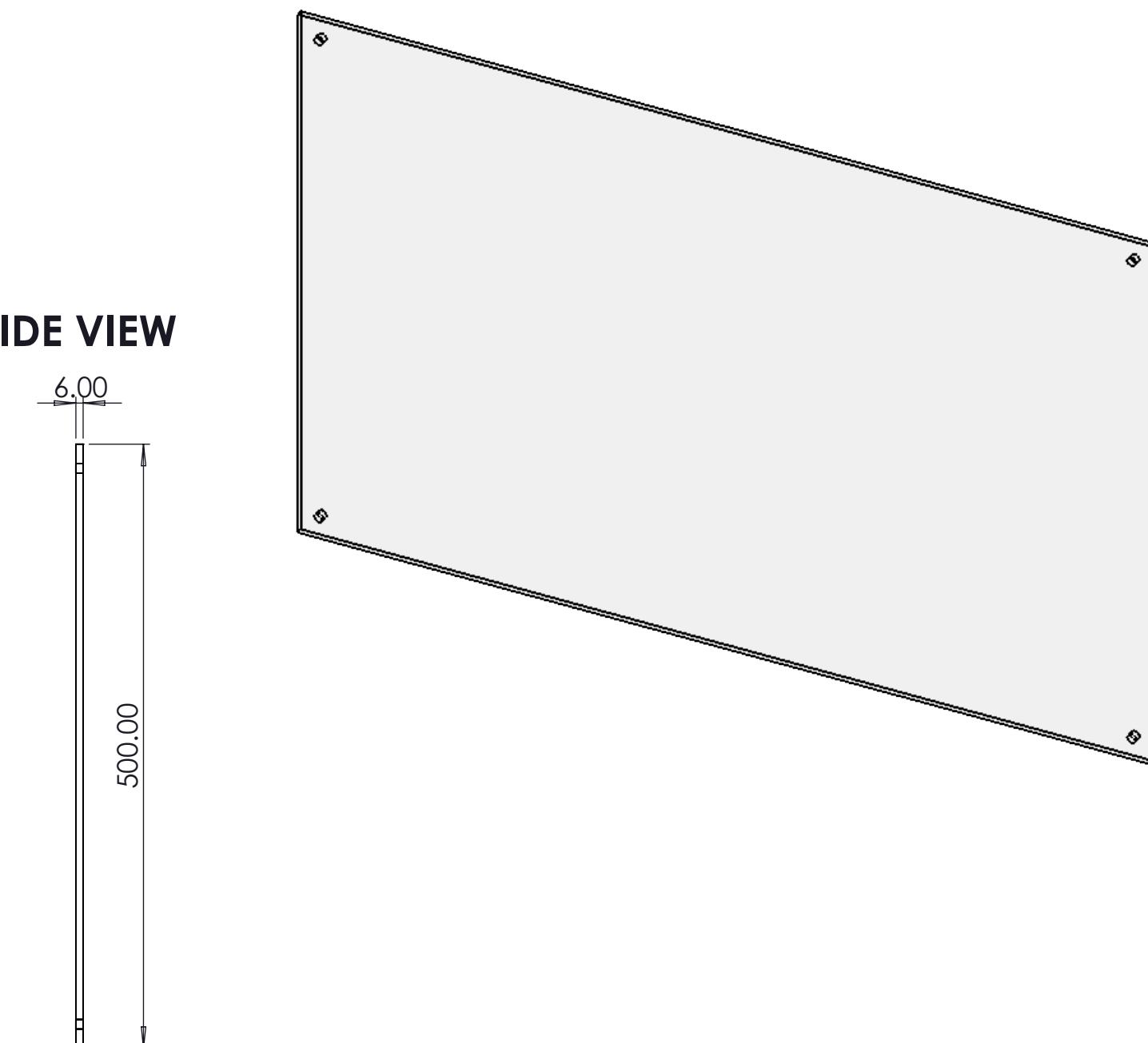
TOP VIEW



FRONT VIEW



SIDE VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

PART NUMBER:

MATERIAL: CLEAR ACRYLIC

HARDNESS: N/A

DATE : 11/2/2024

DRAWN : PREMANSHU BHAGAT

APPROVED: JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**

ACRYLIC PANEL
800X500MM

JOB NO : N/A SCALE: 1:5

ITEM NO : N/A REV : 2

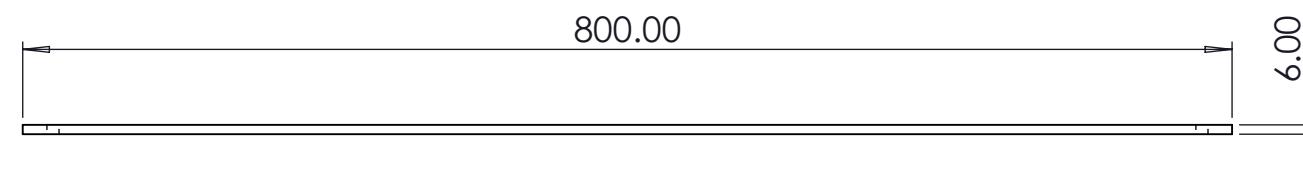
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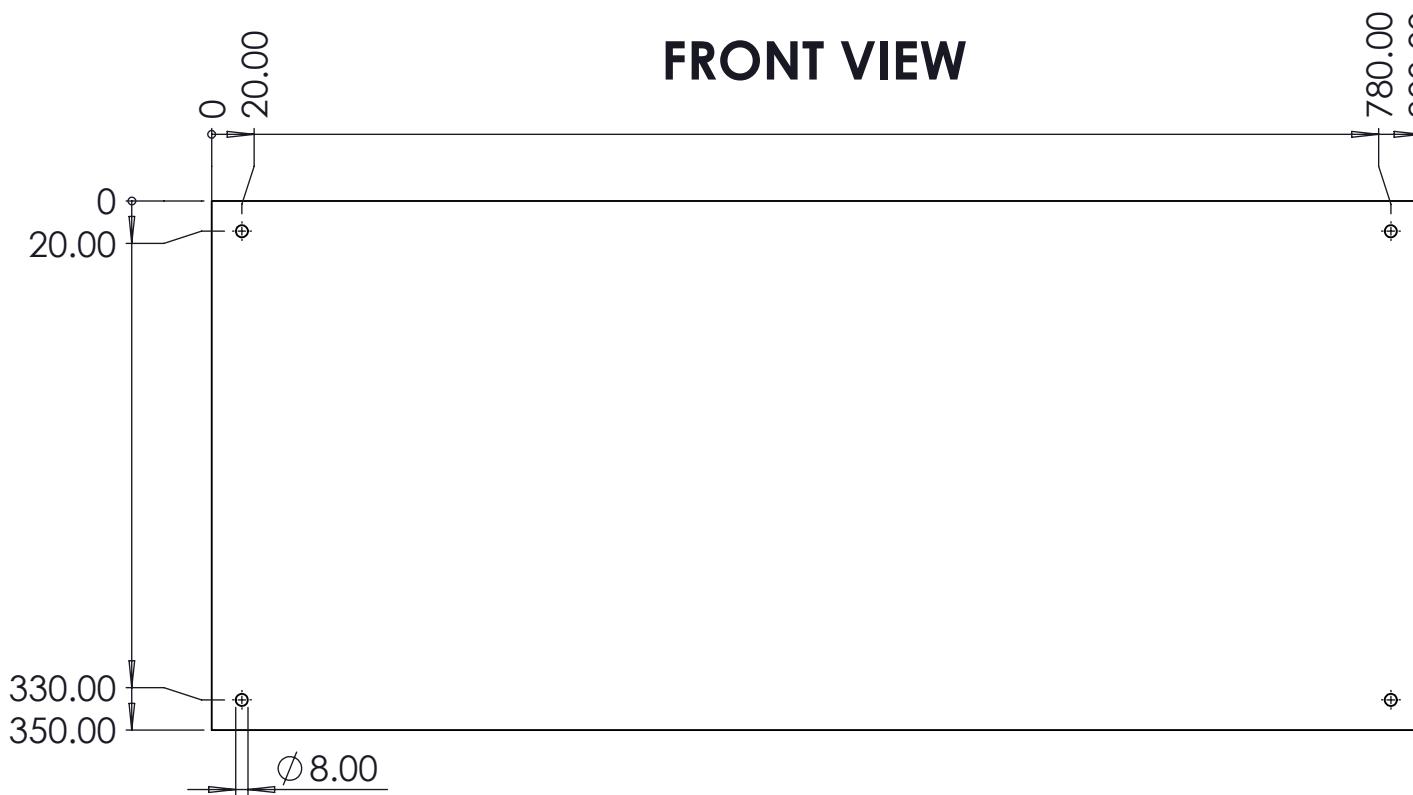
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Sensor Intelligence.

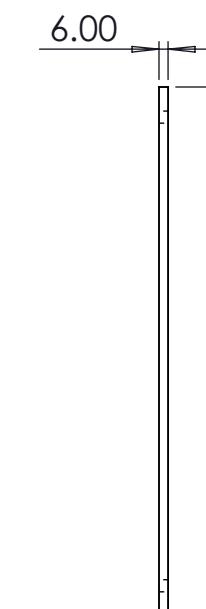
TOP VIEW



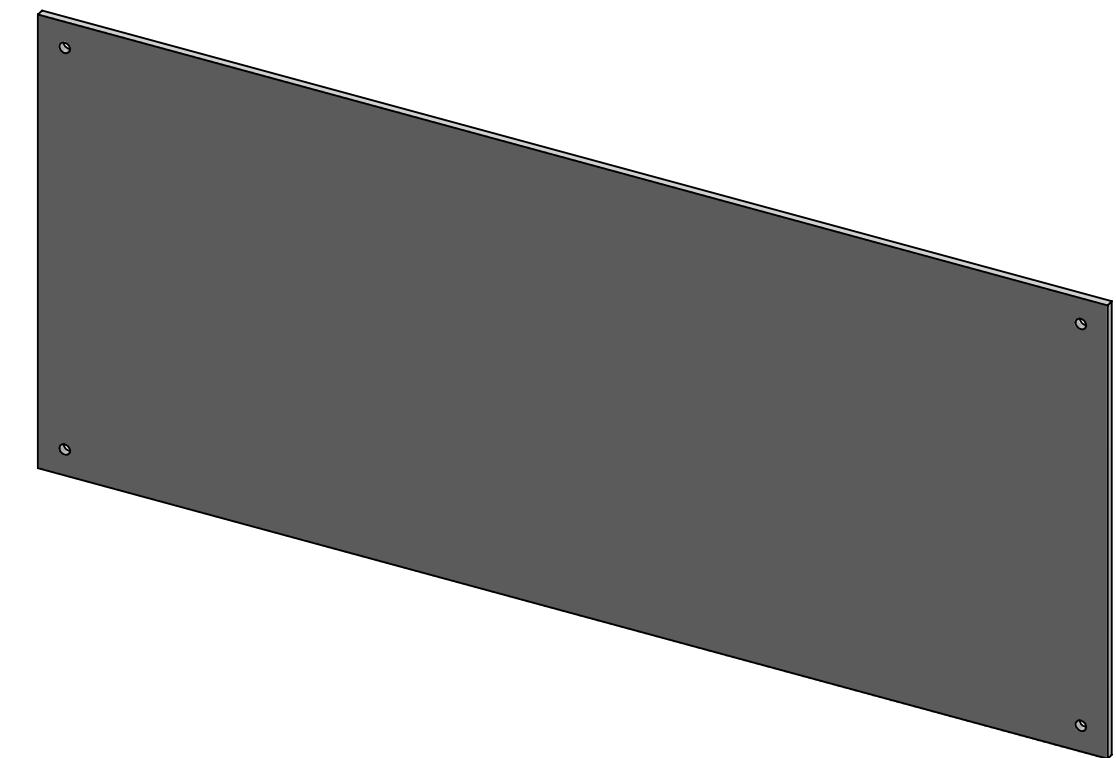
FRONT VIEW



SIDE VIEW



TRIMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

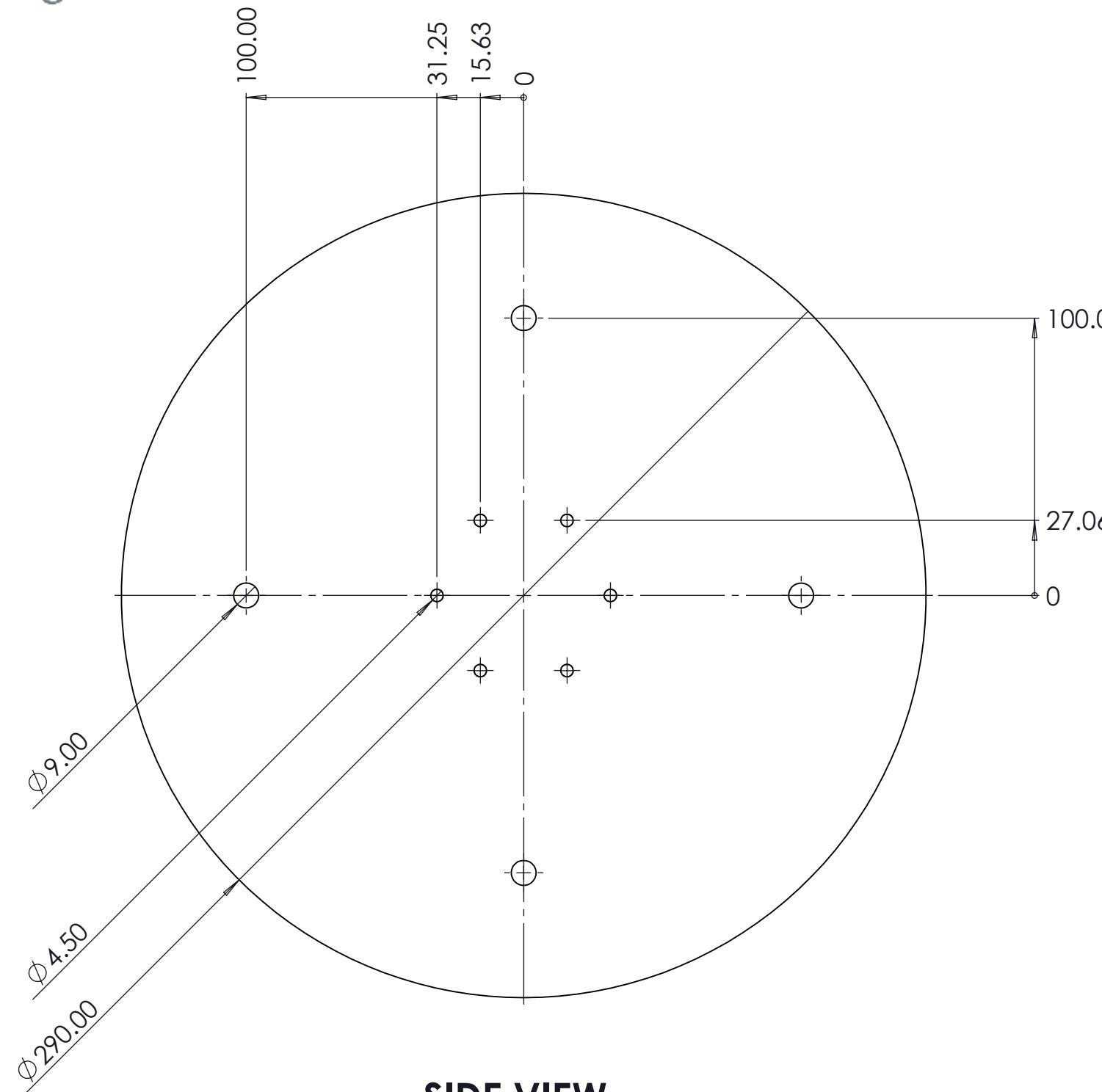
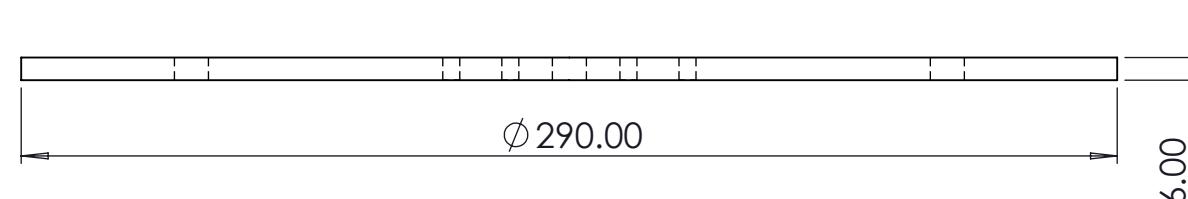
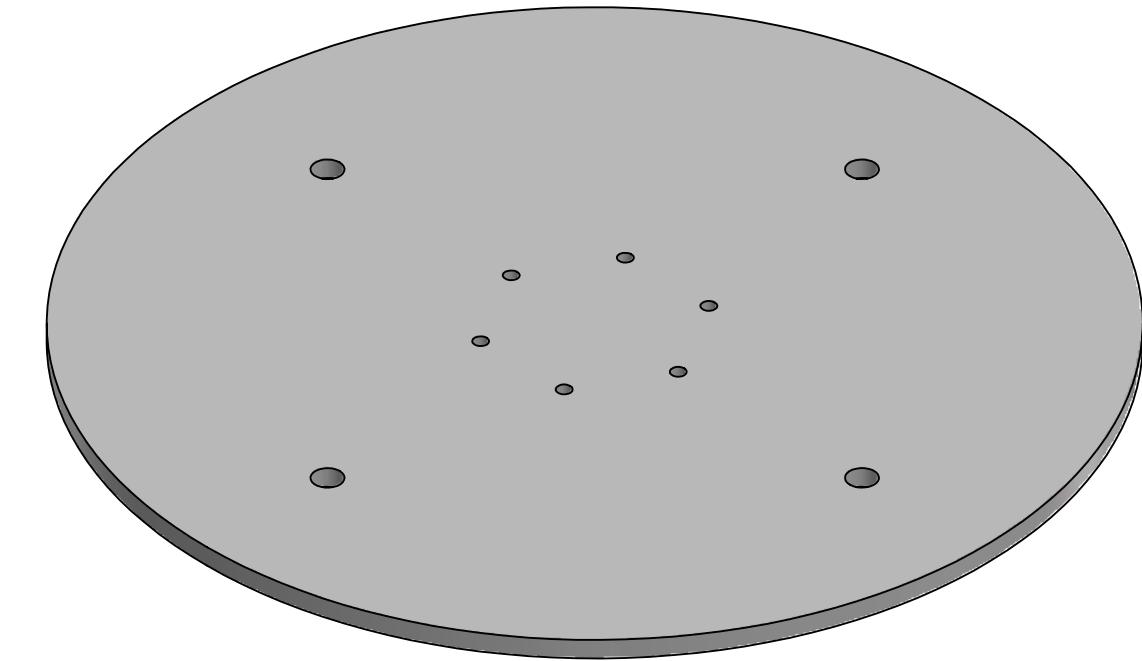
PART NUMBER:		
MATERIAL:	WHITE ACRYLIC	
HARDNESS:	N/A	
DATE :	10/2/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB NO : N/A SCALE: 1:5		
ITEM NO:	N/A REV : 2	B
QUANTITY:	3 SHEET: 14 OF: 20	

**MACHINE VISION
AND AUTO ID**

ACRYLIC PANEL
BASE COVER

SICK

Sensor Intelligence.

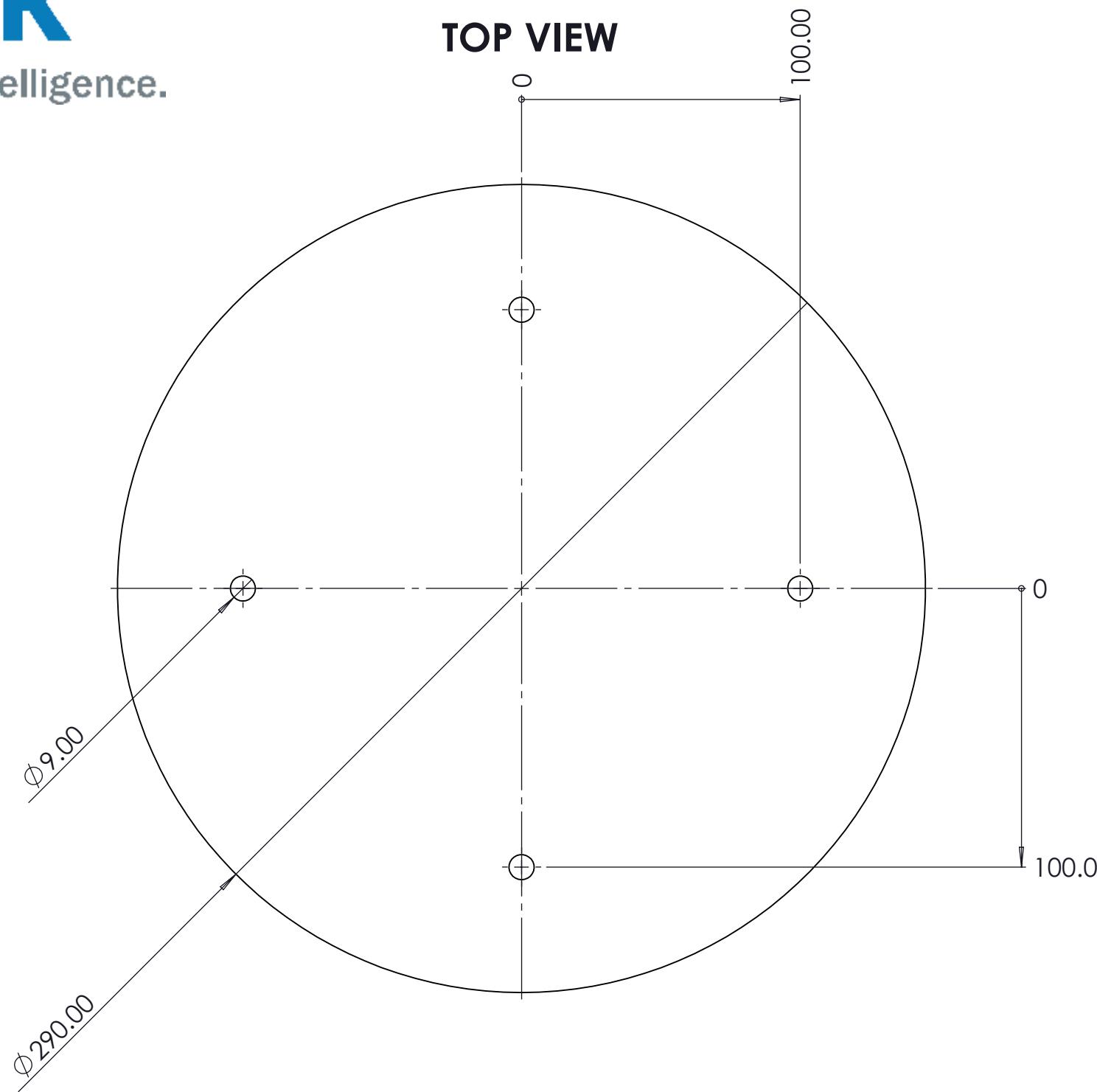
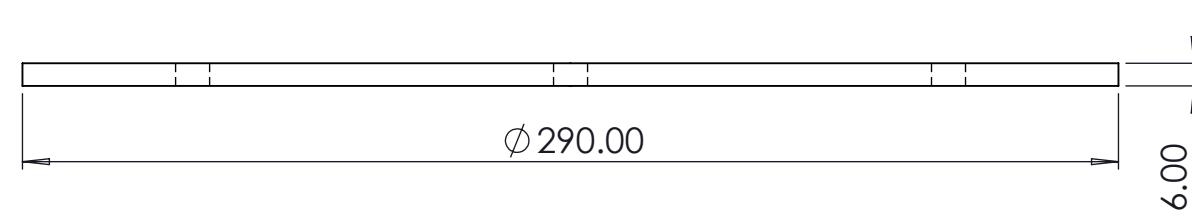
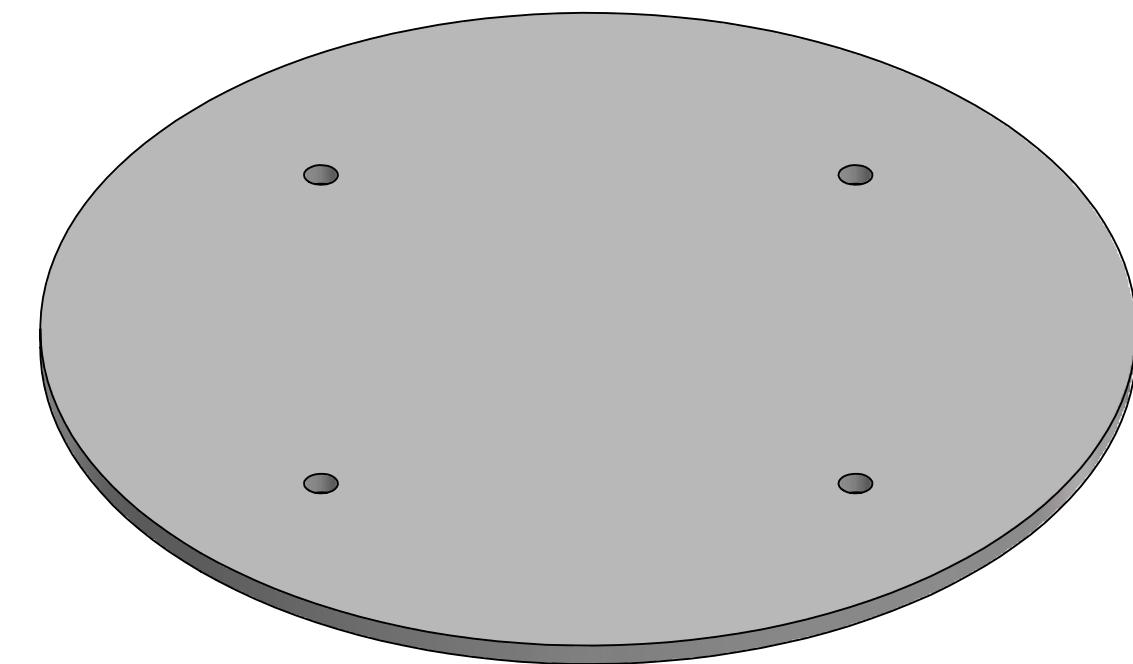
TOP VIEW**SIDE VIEW****ISOMETRIC VIEW****TOLERANCE INFORMATION**UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM****HUMBER**
Faculty of Applied Sciences & Technology

PART NUMBER:			
MATERIAL:	WHITE ACRYLIC		
HARDNESS:	N/A		
DATE :	27/3/2024		
DRAWN :	PREMANSHU BHAGAT		
APPROVED:	JOSHUA GALTON		
JOB NO :	N/A	SCALE:	1:2
ITEM NO :	N/A	REV :	4
QUANTITY:	1	SHEET: 15 OF: 20	B

**MACHINE VISION
AND AUTO ID**ROTARY TABLE
BOTTOM PLATE

SICK

Sensor Intelligence.

TOP VIEW**FRONT VIEW****ISOMETRIC VIEW****TOLERANCE INFORMATION**UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**

Faculty of Applied Sciences & Technology

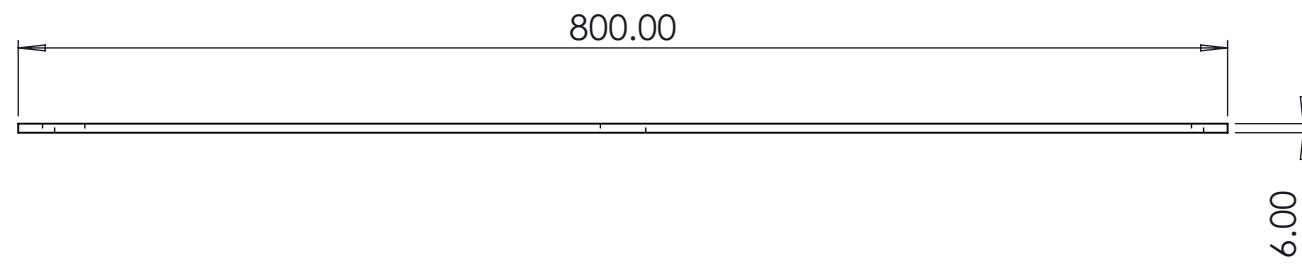
PART NUMBER:	
MATERIAL:	WHITE ACRYLIC
HARDNESS:	N/A
DATE :	27/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**ROTARY TABLE
TOP PLATE

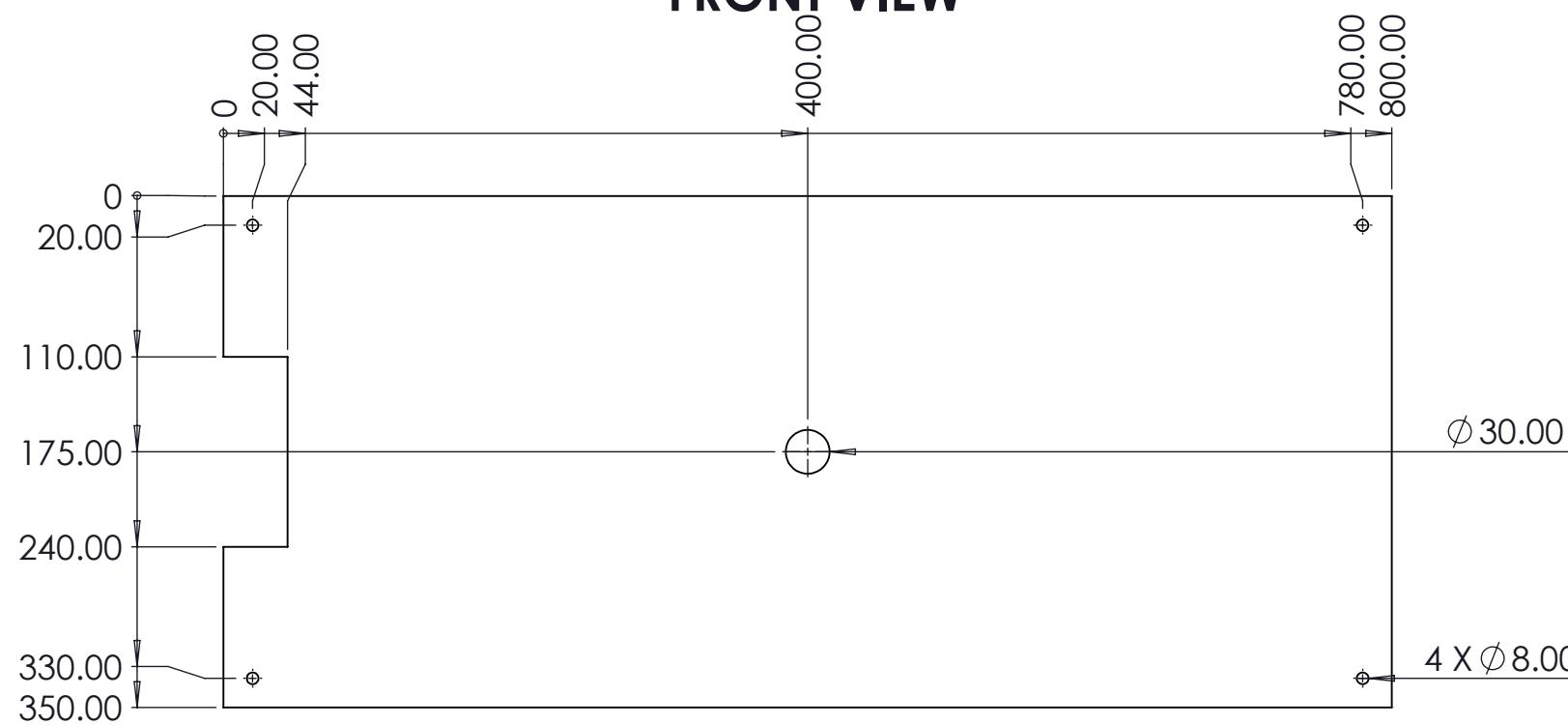
SICK

Sensor Intelligence.

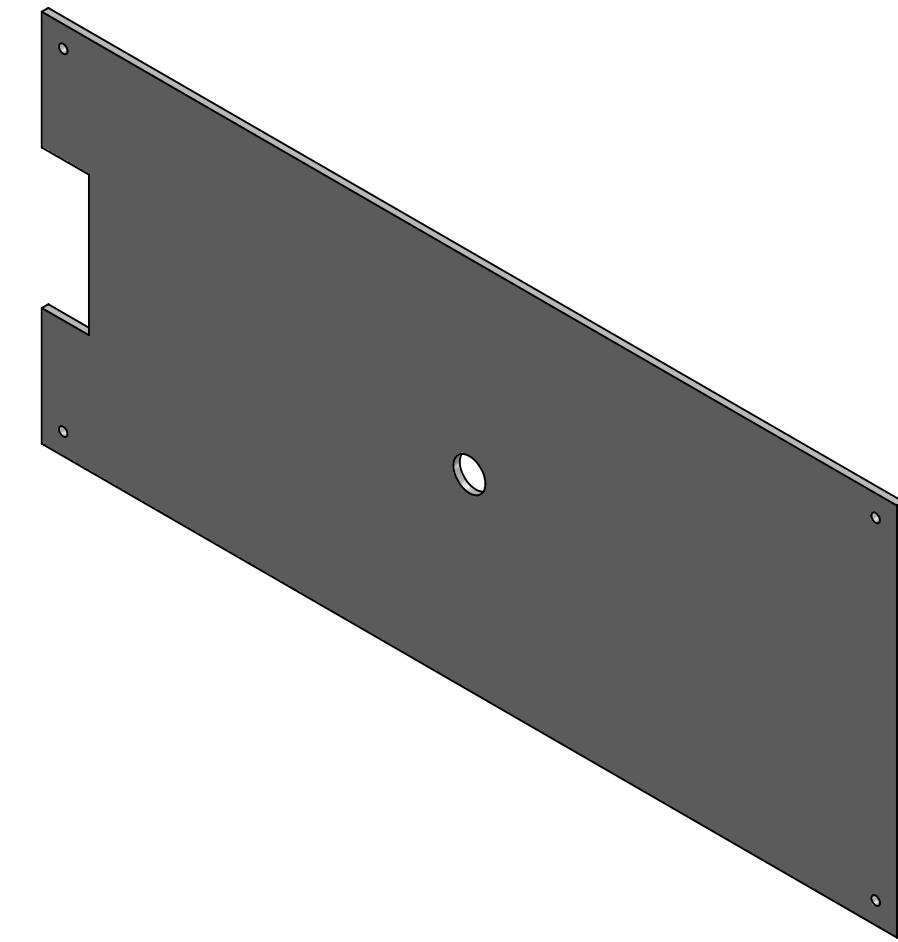
TOP VIEW



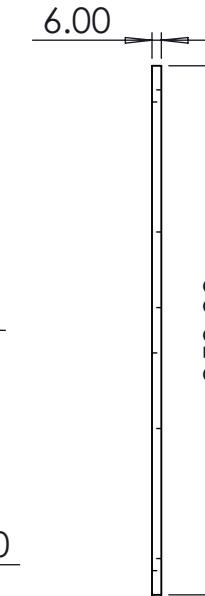
FRONT VIEW



ISOMETRIC VIEW



SIDE VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

PART NUMBER:

MATERIAL: WHITE ACRYLIC

HARDNESS: N/A

DATE : 20/3/2024

DRAWN : PREMANSHU BHAGAT

APPROVED: JOSHUA GALTON

**MACHINE VISION
AND AUTO ID**

ACRYLIC PANEL - ETHERNET
ADAPTER & PC MOUNT

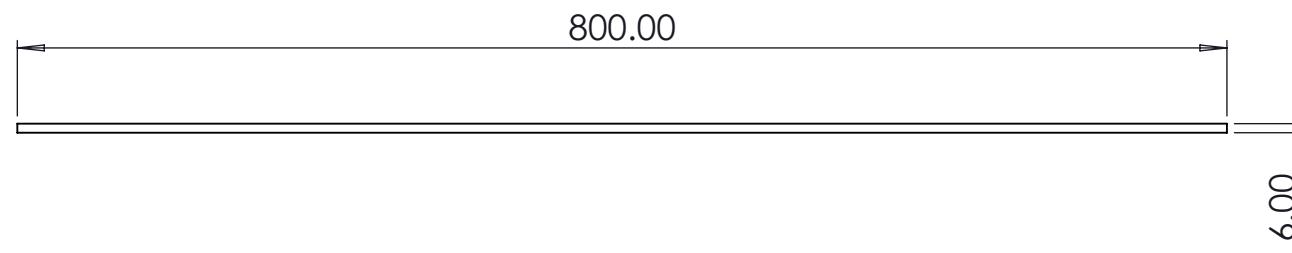
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JOB NO :	N/A	SCALE:	1:5
ITEM NO :	N/A	REV :	2
QUANTITY:	1	SHEET: 17 OF: 20	

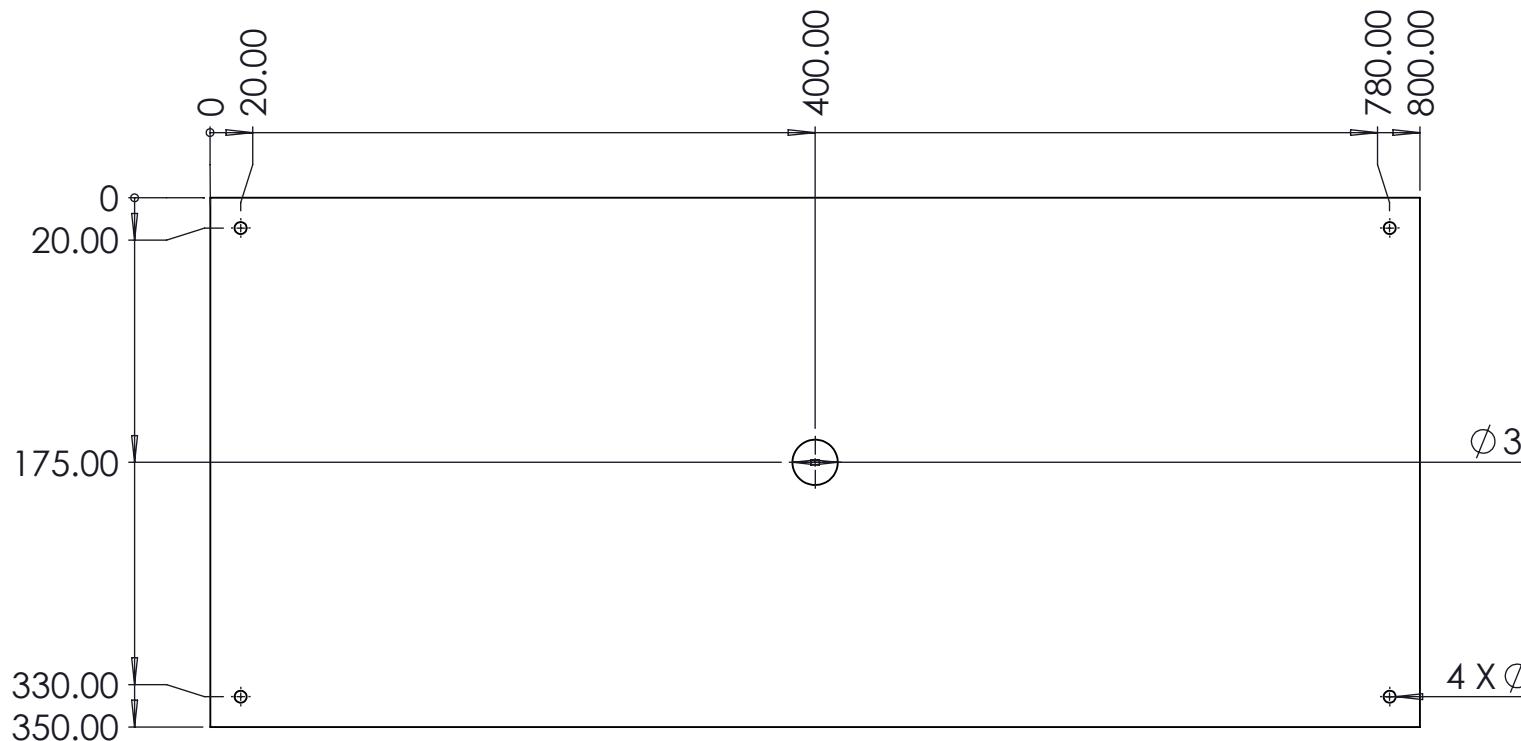
SICK

Sensor Intelligence.

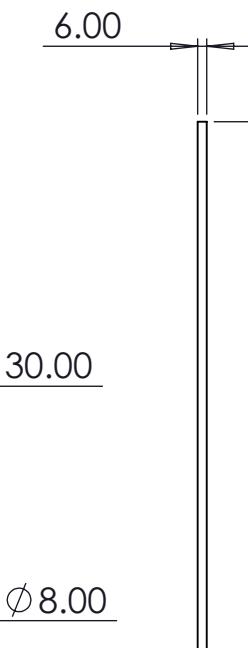
TOP VIEW



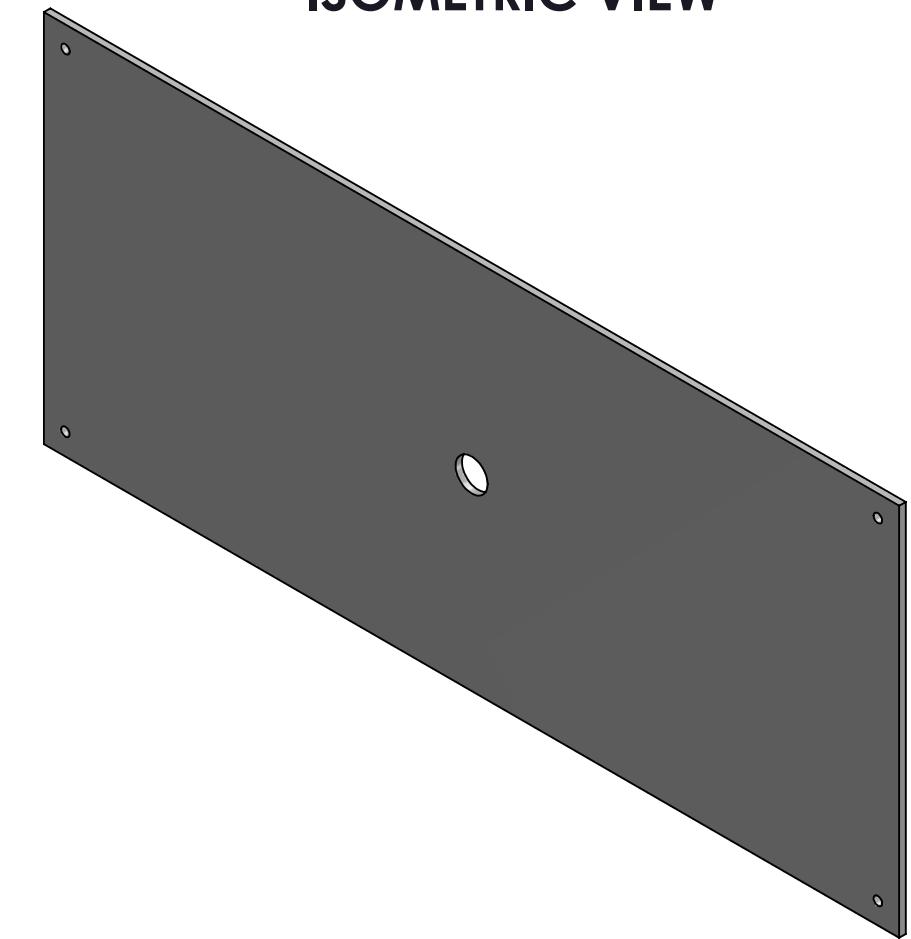
FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

PART NUMBER:		
MATERIAL:	WHITE ACRYLIC	
HARDNESS:	N/A	
DATE :	20/3/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB NO : N/A SCALE: 1:5		
ITEM NO :	N/A	REV : 1
QUANTITY:	1	SHEET: 18 OF: 20

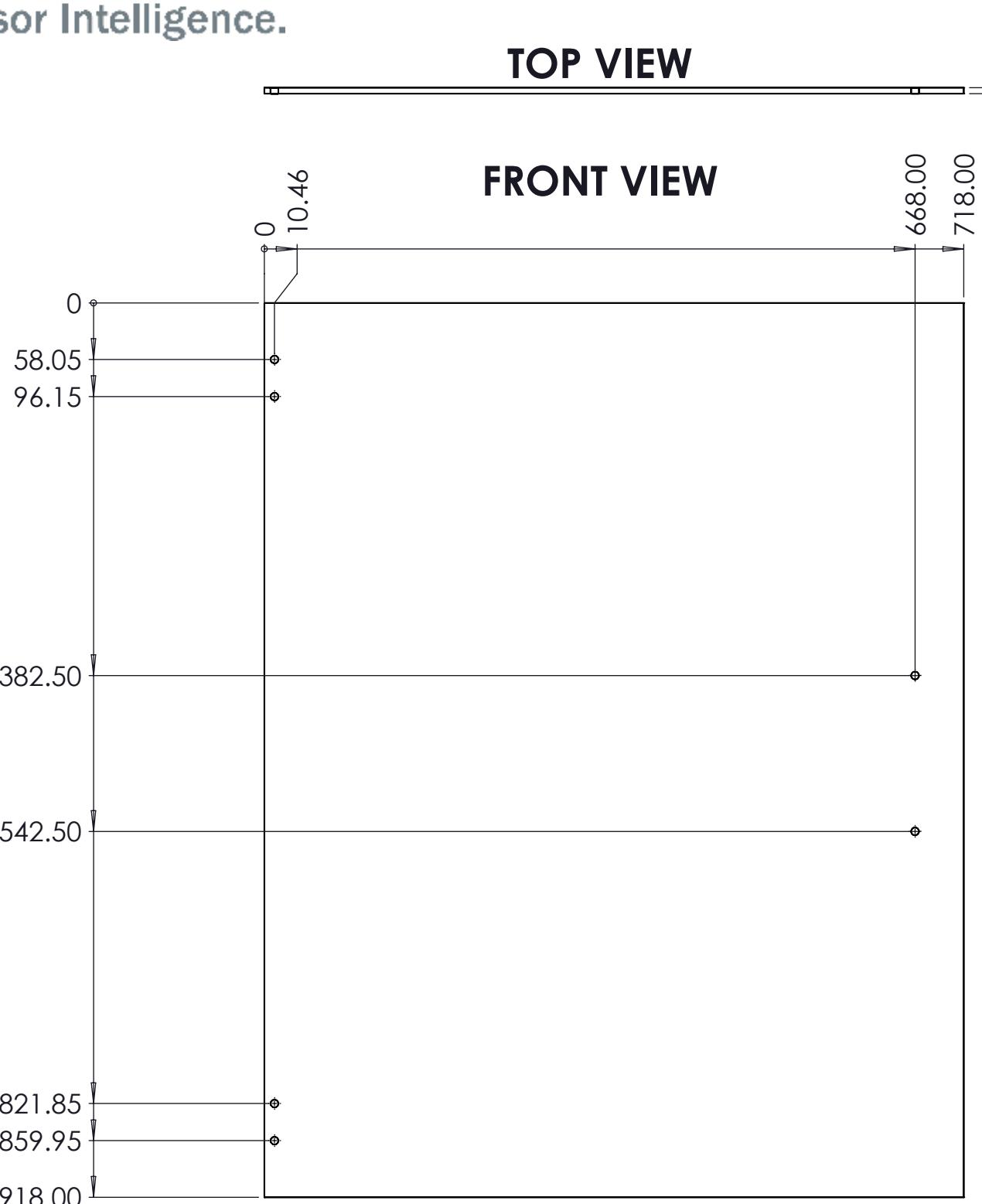
**MACHINE VISION
AND AUTO ID**

LOWER ACRYLIC PANEL
ETHERNET ADAPTER MOUNT

SICK

Sensor Intelligence.

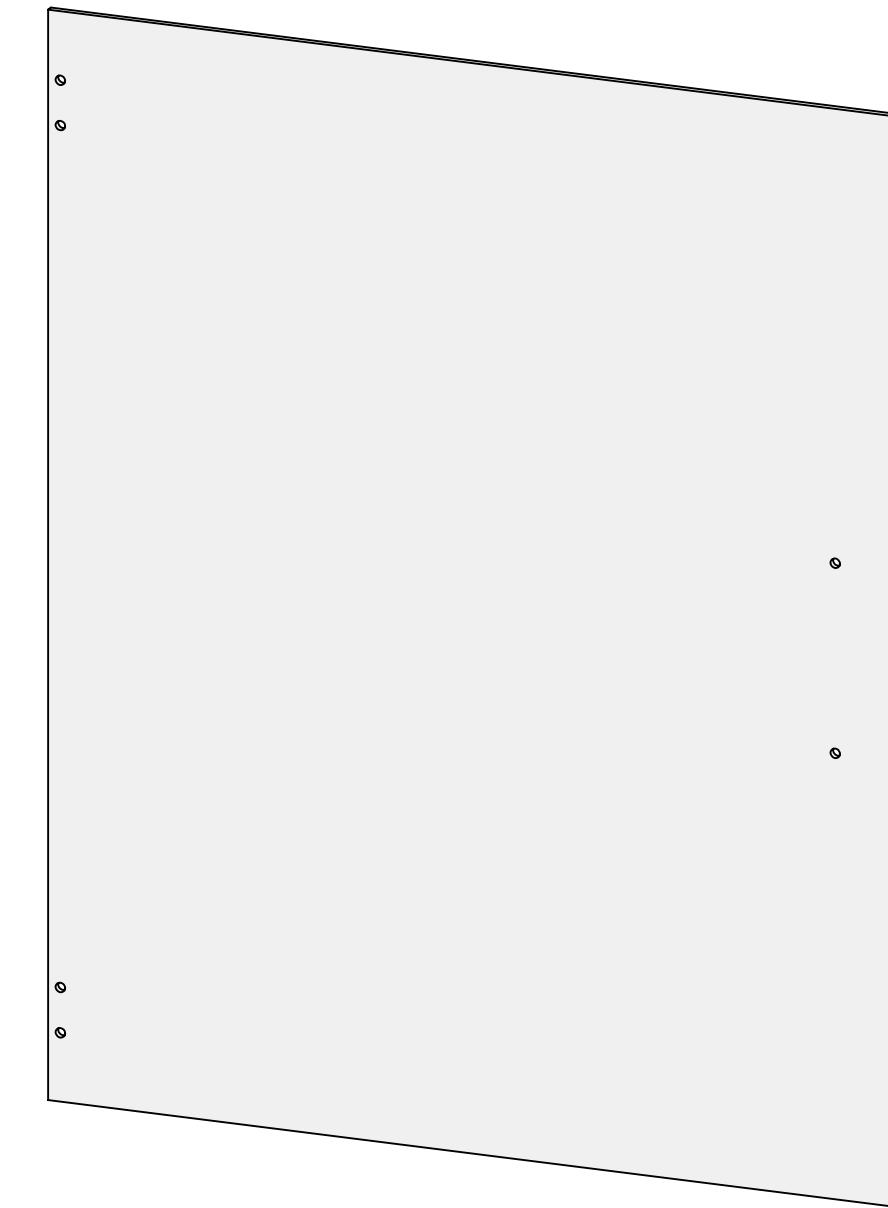
TOP VIEW



SIDE VIEW

6.00

DIMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

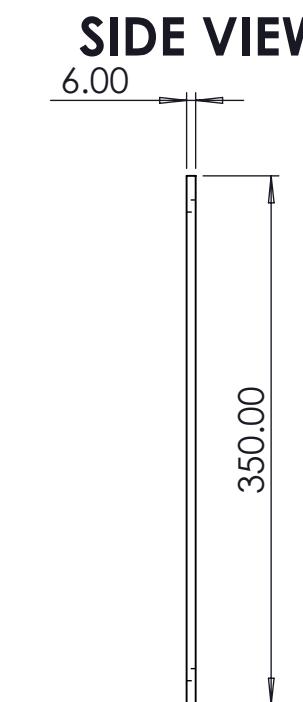
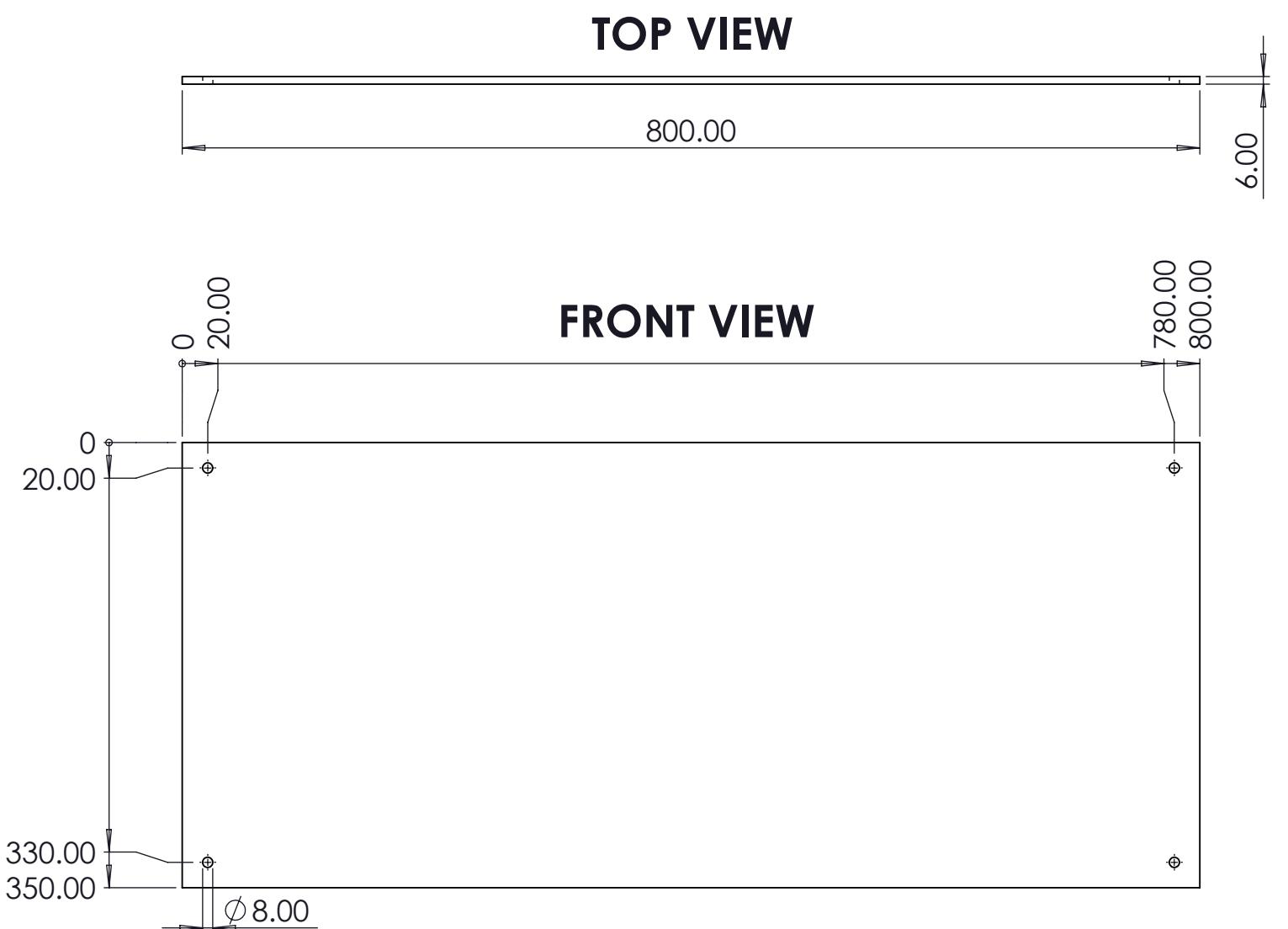
PART NUMBER:			
MATERIAL:	CLEAR ACRYLIC		
HARDNESS:	N/A		
DATE :	20/3/2024		
DRAWN :	PREMANSHU BHAGAT		
APPROVED:	JOSHUA GALTON		
JOB NO :	N/A	SCALE:	1:6
ITEM NO :	N/A	REV :	2
QUANTITY:	1	SHEET:	19 OF: 20

**MACHINE VISION
AND AUTO ID**

BACK DOOR PANEL

SICK

Sensor Intelligence.



TOLERANCE INFORMATION
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN **MM**



Faculty of Applied Sciences & Technology

PART NUMBER:	
MATERIAL:	WHITE ACRYLIC
HARDNESS:	N/A
FINISH:	N/A
DRAWN:	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON
JOB NO :	N/A
ITEM NO :	N/A
QUANTITY:	1
SCALE:	1:5
REV :	2
HEET:	20 OF: 20

**MACHINE VISION
AND AUTO ID**

SICK LOGO BASE PANEL