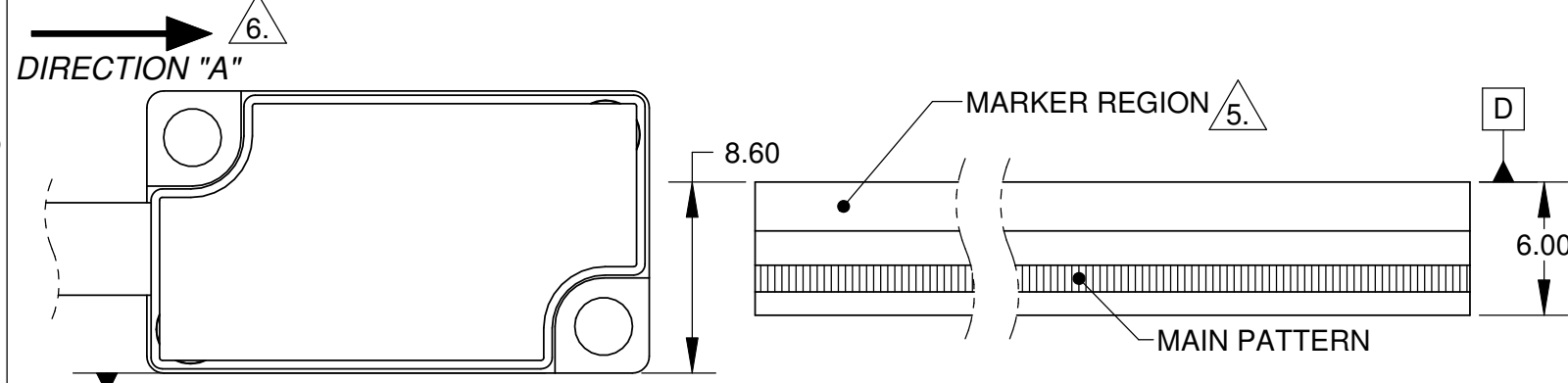
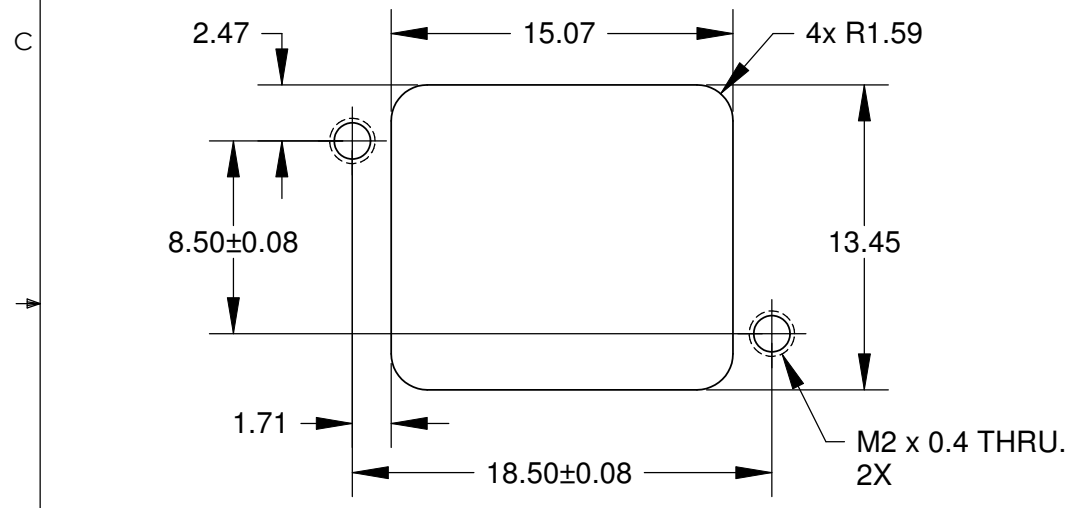


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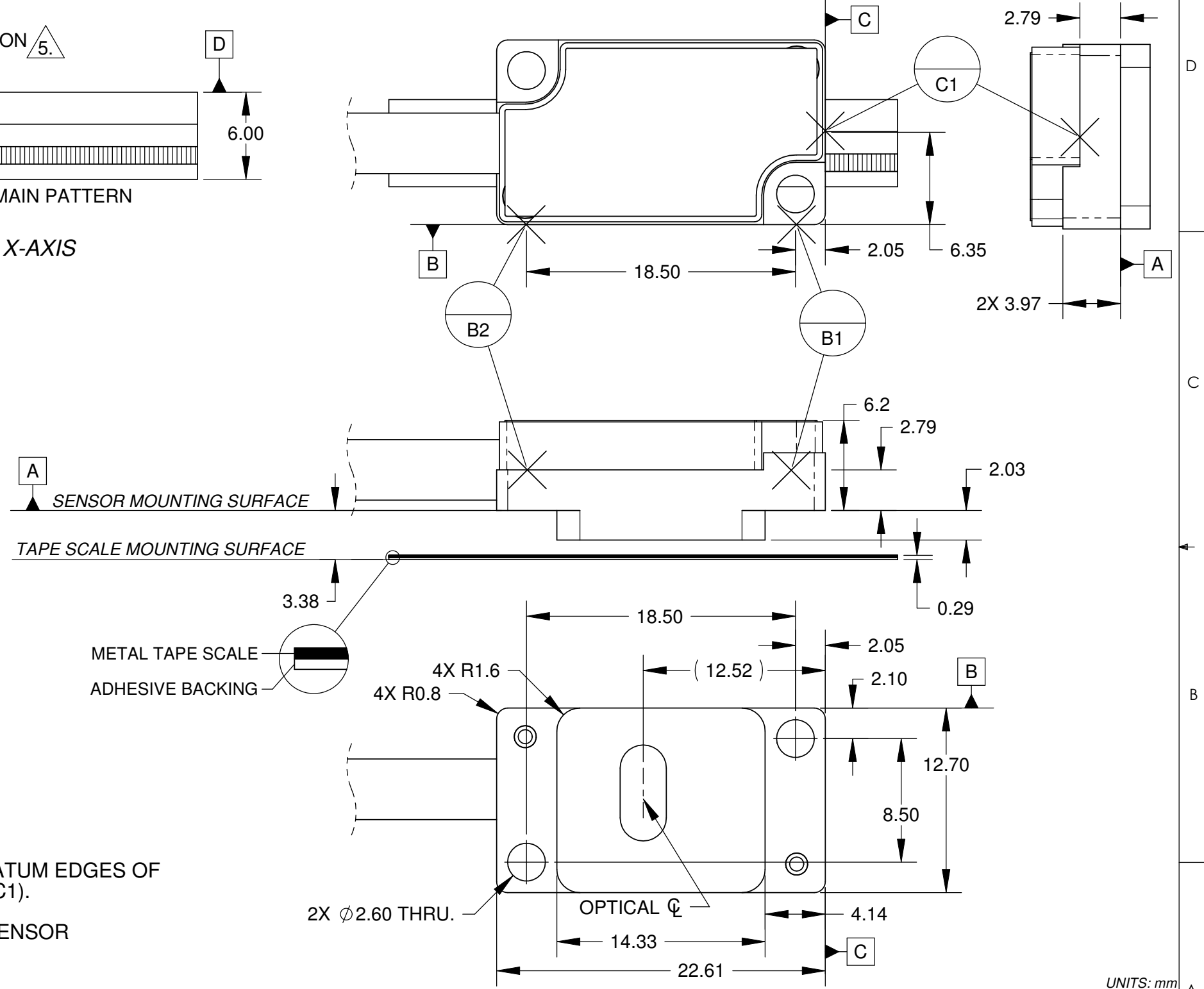
REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
1	----	INITIAL	9/29/09	VB
A	2297	ADDED MARKER TAPE SCALE pg.3, REVISED NOTES, REMOVED MOUNTING REQ. PAGE, REVISED DESIGN OF STICK-ONS (pg.4), CHANGED TITLE. SEE ECO	3/30/11	VB



TAPE SCALE SHOWN IN THIS VIEW TRANSLATED IN X-AXIS OUT OF OPERATING RANGE FOR CLARITY



SENSOR MOUNTING PLATE RECOMMENDATION



- NOTES:**
1. RECOMMENDED MOUNTING HARDWARE:
M2 x 6 mm SOCKET HEAD CAP SCREWS.
 2. IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT (REFERENCE DATUMS B1, B2 AND C1).
 3. HEIGHT OF SENSOR BENCHING PINS MUST NOT EXCEED HEIGHT OF SENSOR BODY (2.79 mm).
 4. RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS.
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).

5. SEE SHEETS 3 AND 4 FOR DIMENSIONS AND LOCATIONS OF MARKERS.
6. WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+ (PIN 14) LEADS OUTPUT SIGNAL B+ (PIN 13). THIS APPLIES TO QUADRATURE SENSOR ONLY.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994

TOLERANCES ARE:
DECIMALS: .X±.25
.XX±.13

APPROVALS

DRAWN	S.BUTURLIA	DATE	9/21/09
CHECKED			
ENGRG.	A.GOLDMAN	DATE	3/28/11
MFG ENG	D.McLOUGHLIN	DATE	3/28/11
QA	A.VILLARROEL	DATE	3/29/11

MicroE Systems
Division of GSI Group
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION:
INTERFACE, ENCODER, 20 µm TAPE/MARKER TAPE SCALES MERCURY II 6000 SENSOR

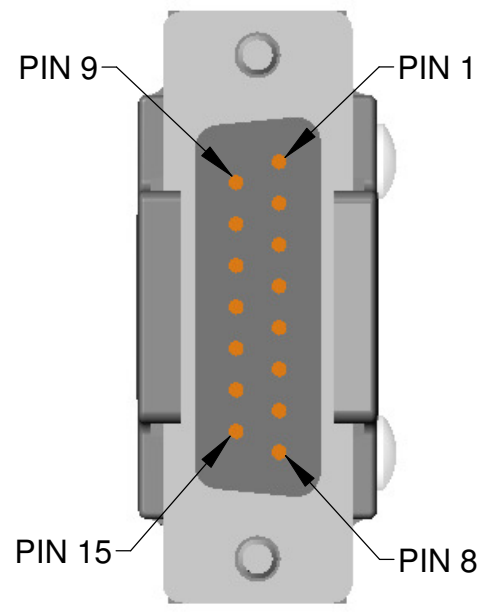
SIZE DWG. NO. **ID-00367** REV. **A**

SUBJECT TO CHANGE WITHOUT NOTIFICATION

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 1 OF 4

UNITS: mm

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SEE TABLES 2 AND 3 FOR PIN FUNCTIONS

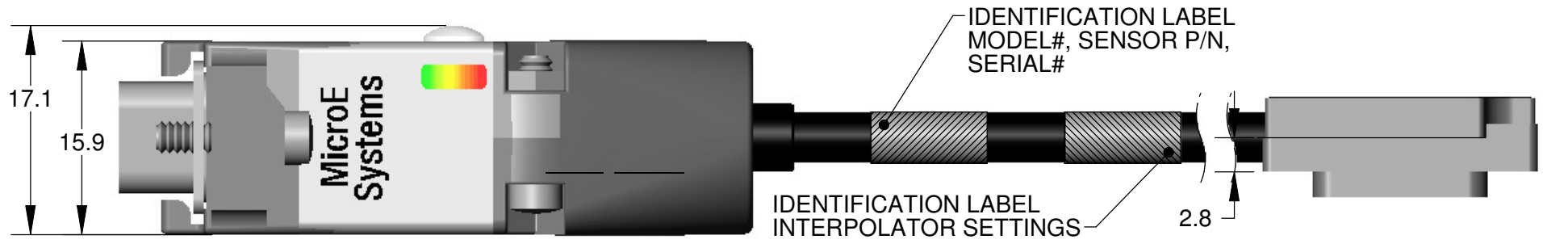
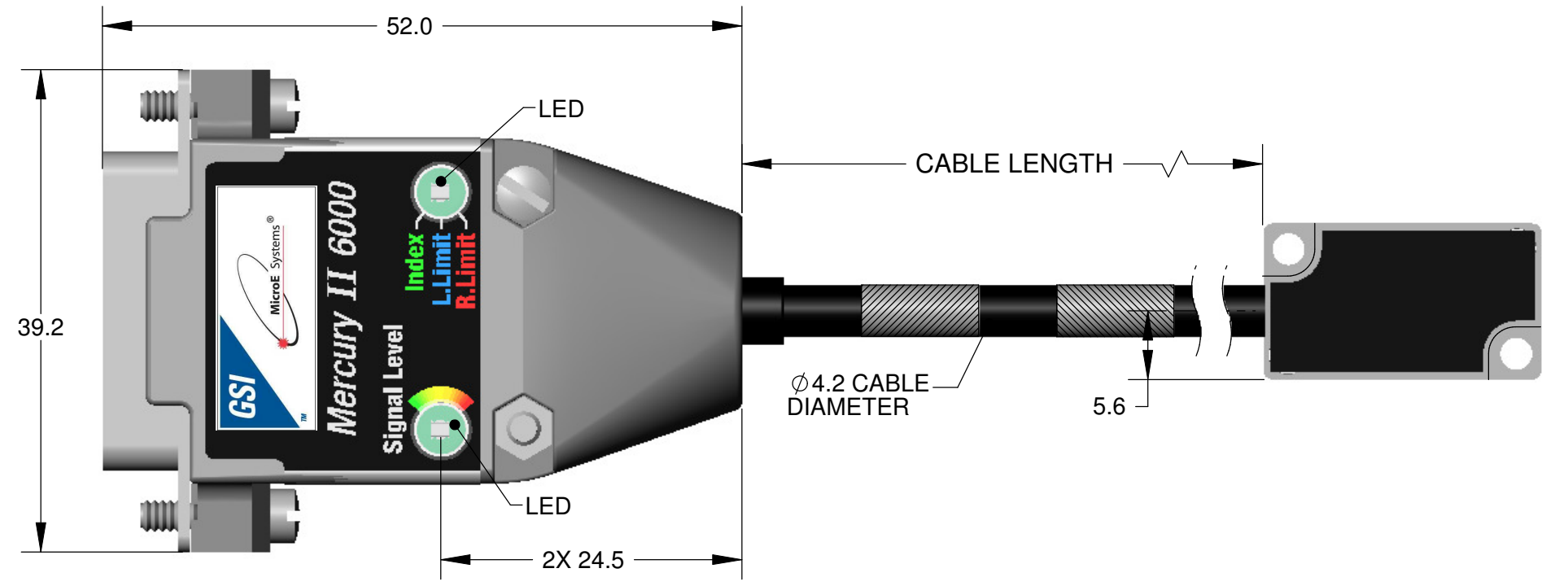


TABLE 2.

Mercury II 6000 15-Plug Quadrature Output

Pin	Function
1	RL+
3	RL-
2	GND
7	5V
4	I-
12	I+
5	B-
13	B+
6	A-
14	A+
8	5V
9	GND
10	LL+
11	LL-
15	ALARM

TABLE 3.

Mercury II 6000 15-Plug Serial Output

Pin	Function
1	nCS+
3	nCS-
2	GND
7	5V
4	DIAG_IN_OUT-
12	DIAG_IN_OUT+
5	SCLOCK_OUT-
13	SCLOCK_OUT+
6	SDATA_OUT-
14	SDATA_OUT+
8	5V
9	GND
10	SCLOCK_IN+
11	SCLOCK_IN-
15	ALARM

Cable Lengths
1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

GSI MicroE Systems
Division of GSI Group

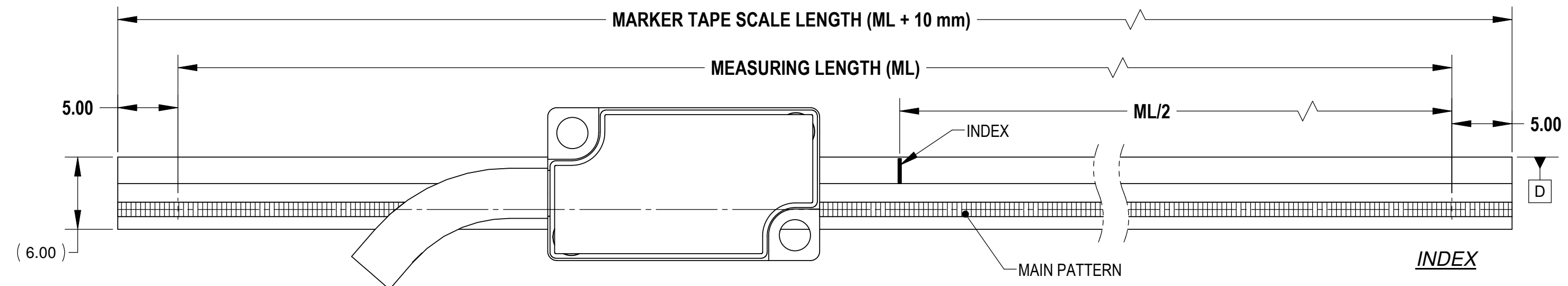
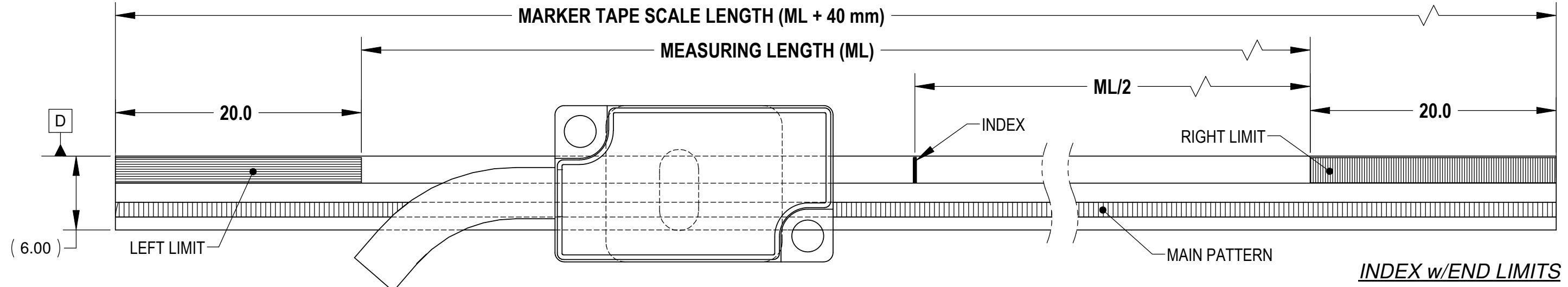
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION:
INTERFACE, ENCODER, 20 um
TAPE/MARKER TAPE SCALES
MERCURY II 6000 SENSOR

SIZE DWG. NO. REV.
B ID-00367 A

SCALE: CAD FILE: 3rd ANGLE PROJECTION SHEET 2 OF 4

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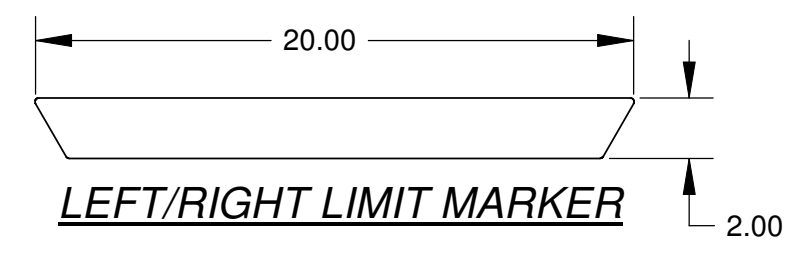
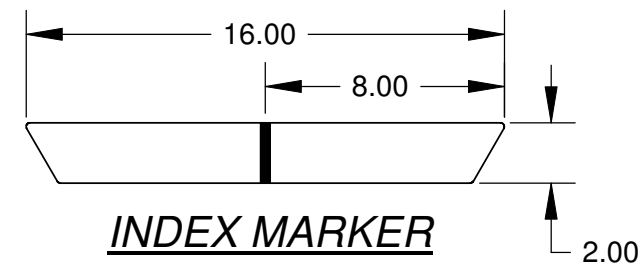
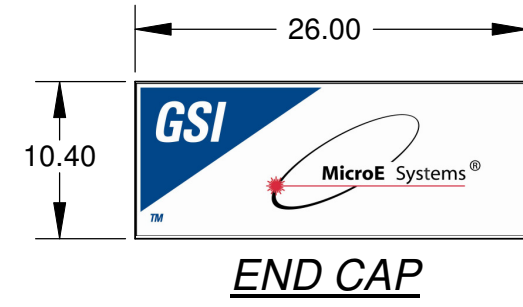
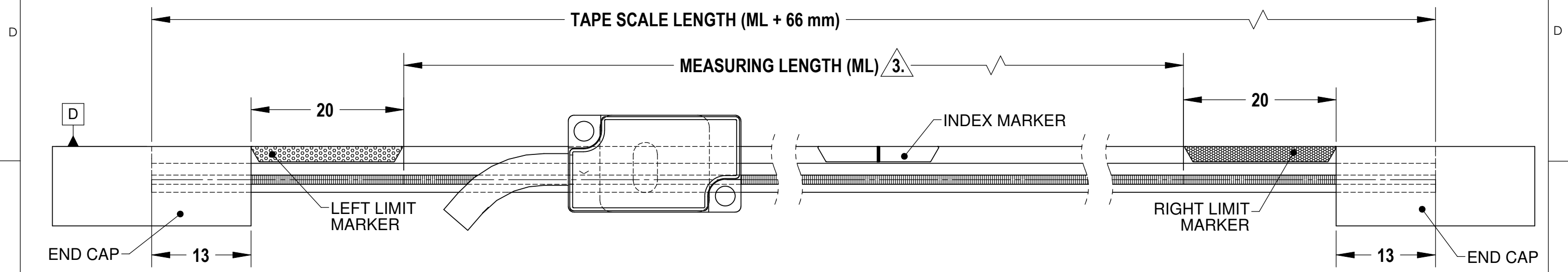


NOTES:

1. MARKER TAPE SCALES CAN BE SUPPLIED IN INDIVIDUAL PIECES OR IN CONTINUOUS FORM.
2. END CAPS ARE OPTIONAL. IF USED, RECOMMENDED MINIMUM EXPOSED LENGTH OF END LIMITS IS 5 mm (SEE INSTALLATION MANUAL), AND ADDITIONAL TAPE LENGTH MAY BE REQUIRED BASED ON APPLICATION.
3. REFERENCE MARKERS (STICK-ONS) CANNOT BE USED ON MARKER TAPE.
4. FOR ALTERNATE MARKER LOCATIONS OR LENGTHS, MULTIPLE INDEXES OR ADDITIONAL FEATURES, CONTACT MICROE SYSTEMS.

		MicroE Systems Division of GSI Group	
		125 Middlesex Tpk. Bedford, MA 01730	
DESCRIPTION: INTERFACE, ENCODER, 20 um, MARKER TAPE SCALE, MERCURY II 6000 SENSOR			
SIZE	DWG. NO.	REV.	
B	ID-00367	A	
SCALE:	CAD FILE:	3RD ANGLE PROJECTION	SHEET 3 OF 4

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NOTES:

1. BEFORE PLACING INDEX MARKERS, LIMIT MARKERS AND END CAPS, REMOVE PROTECTIVE FILM FROM TAPE SCALE.
2. NOTE DATUM EDGE OF TAPE SCALE AND REFERENCE MARKER REGION BEFORE APPLYING MARKERS.
3. MINIMUM MEASURING LENGTH SHOWN. ACTUAL MEASURING LENGTH MAY BE GREATER.
4. END CAPS, INDEX AND LIMIT MARKERS ARE OPTIONAL (SEE INSTALLATION MANUAL). WHEN NO LIMITS OR END CAPS ARE USED, RECOMMENDED TAPE SCALE LENGTH = MEASURING LENGTH + 10 mm.
5. LIMIT MARKERS CAN BE PLACED AT ENDS OF TAPE SCALE WHEN END CAPS ARE NOT USED.
6. END CAPS, INDEX AND LIMIT MARKERS SHALL NOT OVERLAP (WILL CAUSE INTERFERENCE WITH SENSOR).
7. FOR OTHER LENGTHS OF REFERENCE MARKERS, CONTACT MICROE SYSTEMS.

UNITS: mm

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Division of GSI Group

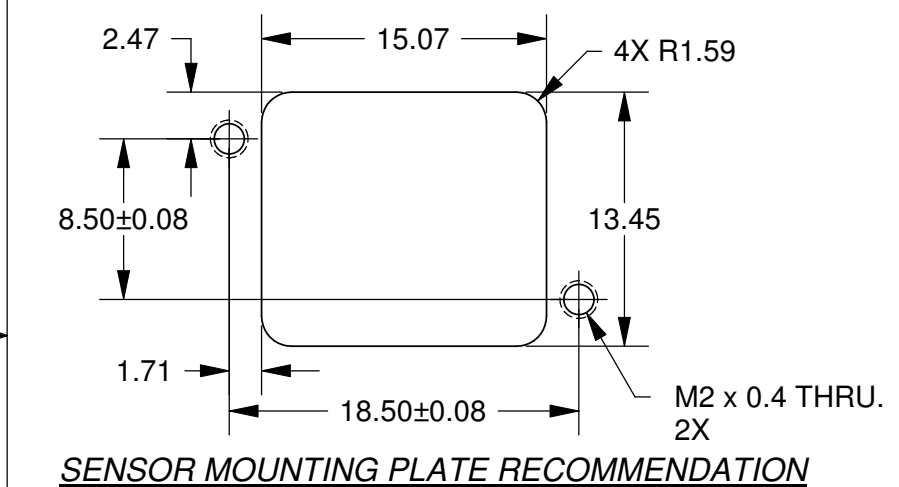
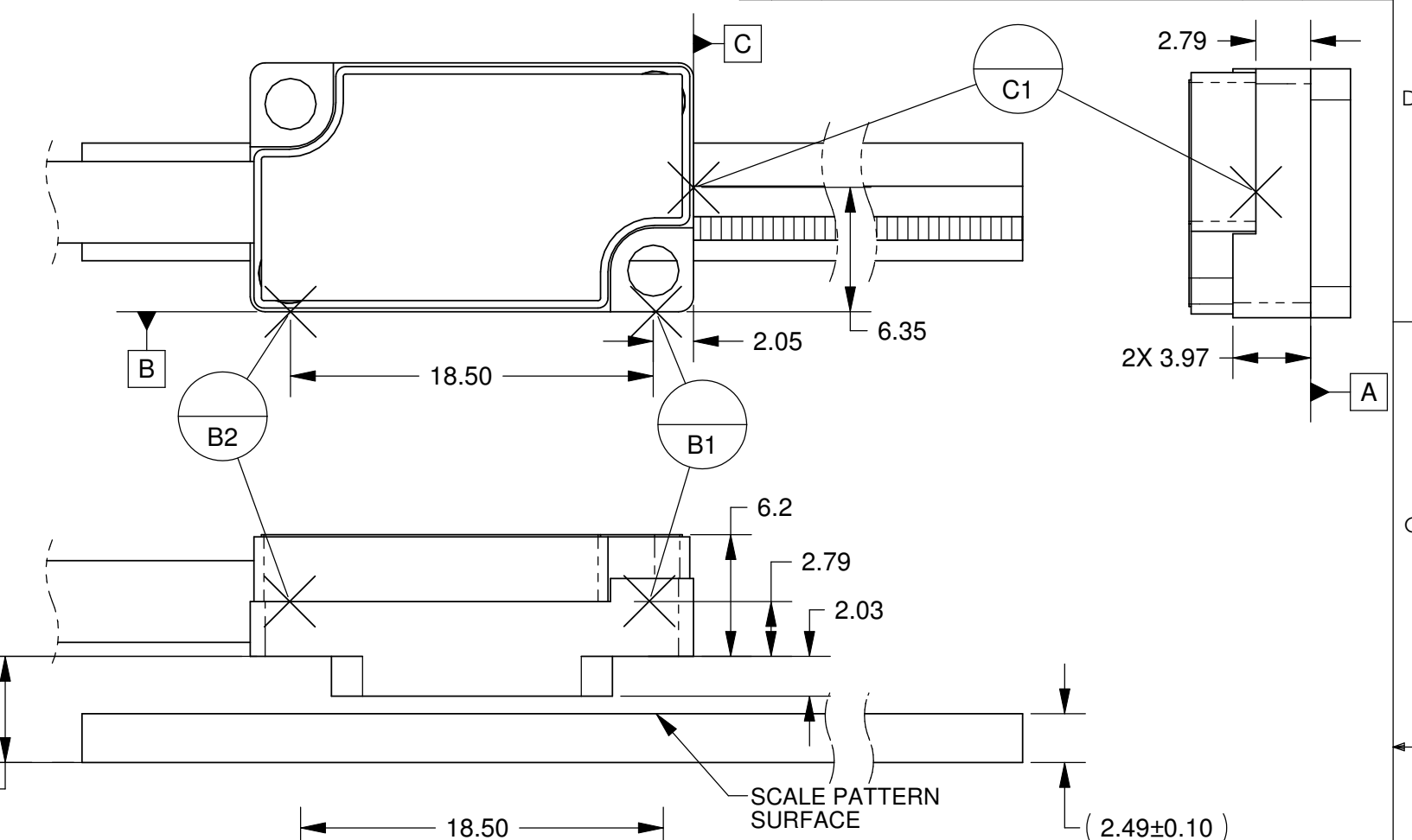
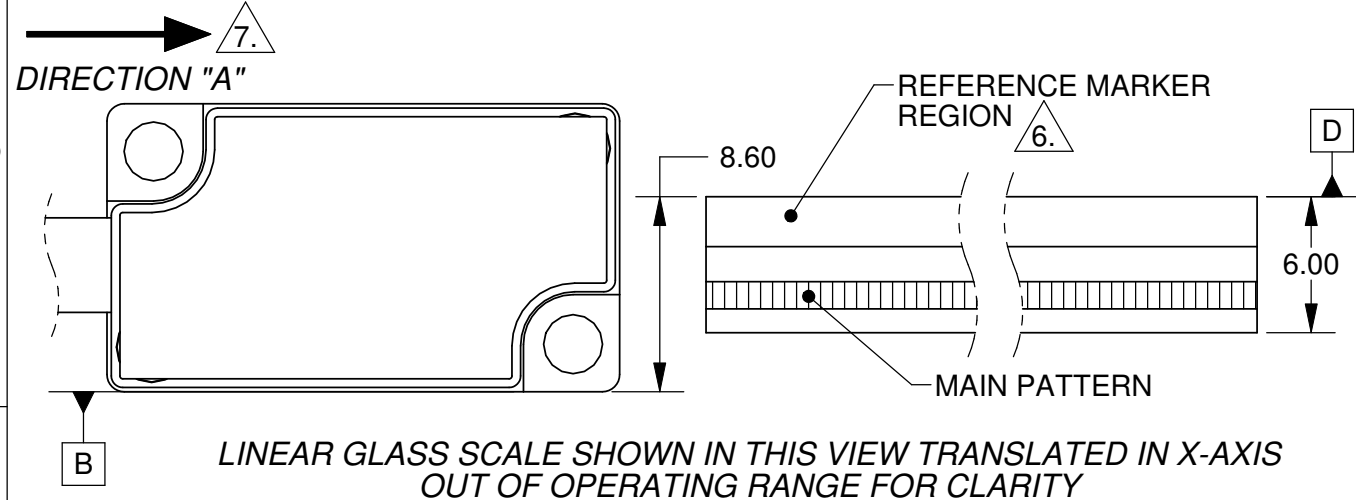
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20 um
TAPE SCALE w/STICK-ON
INDEX and LIMITS,
MERCURY II 6000 SENSOR

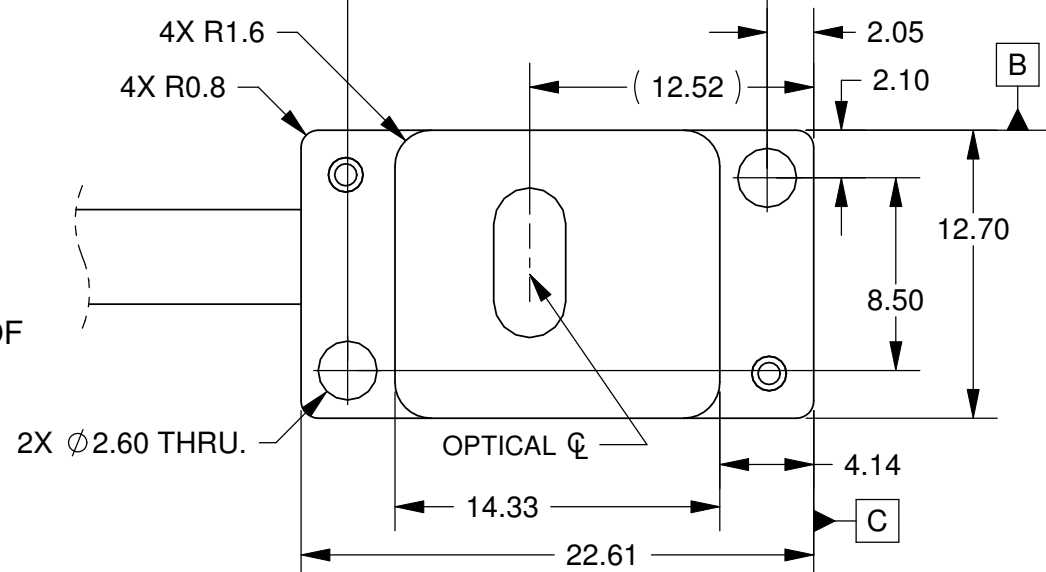
SIZE	DWG. NO.	REV.
B	ID-00367	A
SCALE:	CAD FILE:	3rd ANGLE PROJECTION SHEET 4 OF 4

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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
1	----	INITIAL	9/29/09	VB
A	2297	CHANGED REFERENCE MARKERS, REVISED NOTES, RELEASE TO PRODUCTION	3/30/11	VB



- NOTES:
1. RECOMMENDED MOUNTING HARDWARE:
M2 x 6 mm SOCKET HEAD CAP SCREWS
 2. IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT. (REFERENCE DATUMS B1, B2 AND C1).
 3. HEIGHT OF SENSOR BENCHING PINS MUST NOT EXCEED HEIGHT OF SENSOR BODY (2.79 mm).
 4. HEIGHT OF SCALE BENCHING PINS NOT TO EXCEED THE THICKNESS OF THE SCALE.
 5. RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).
6. SEE SHEET 3 FOR DIMENSIONS AND LOCATIONS OF REFERENCE MARKERS.
7. WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+ (PIN 14) LEADS OUTPUT SIGNAL B+ (PIN 13). THIS APPLIES TO QUADRATURE SENSOR ONLY.



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994 TOLERANCES ARE: DECIMALS: .X ±.25 .XX ±.13 ANGULAR: ±30 MIN.	APPROVALS	DATE	 MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730 DESCRIPTION: INTERFACE, ENCODER, 20 um SHORT LINEAR w/ STICK-ON INDEX AND LIMITS, MERCURY II 6000 SENSOR
	DRAWN S.BUTURLIA	9/21/09	
	CHECKED		
	ENGRG. A.GOLDMAN	3/28/11	
	MFG ENG D.MCLOUGHLIN	3/28/11	
	QA A.VILLARROEL	3/29/11	

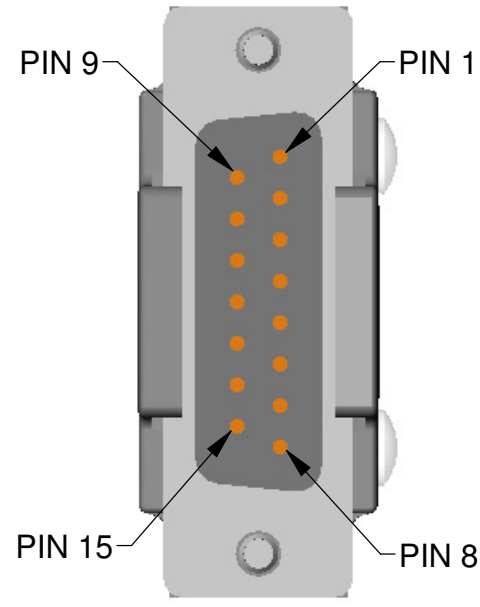
UNITS: mm

SIZE B DWG. NO. ID-00368 REV. A

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 1 OF 3

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SEE TABLES 2 AND 3 FOR PIN FUNCTIONS

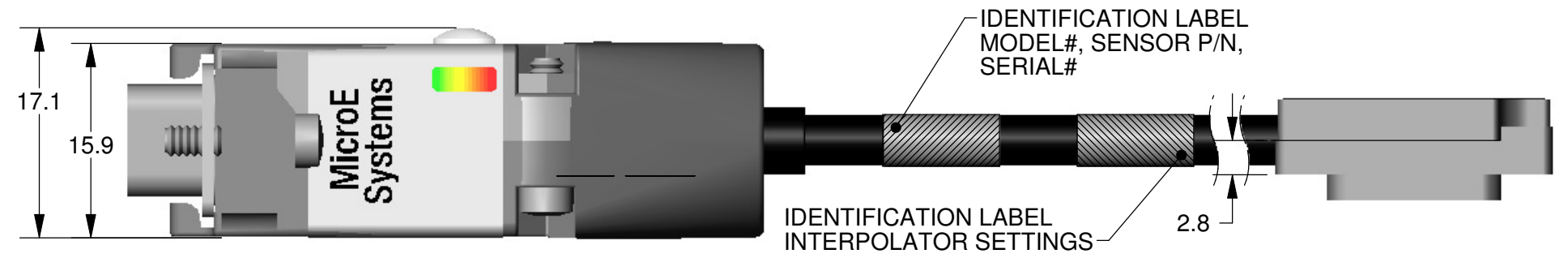
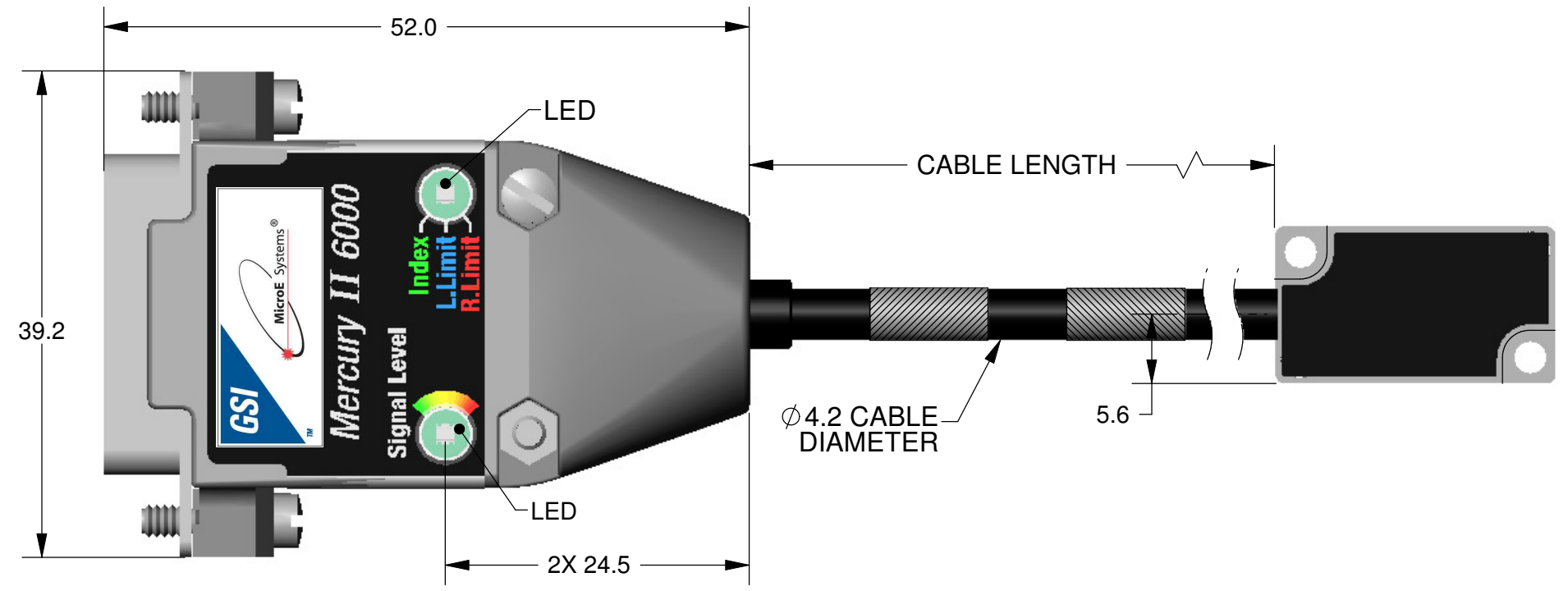


TABLE 2.

Mercury II 6000 15-Plug Quadrature Output

Pin	Function
1	RL+
3	RL-
2	GND
7	5V
4	I-
12	I+
5	B-
13	B+
6	A-
14	A+
8	5V
9	GND
10	LL+
11	LL-
15	ALARM

TABLE 3.

Mercury II 6000 15-Plug Serial Output

Pin	Function
1	nCS+
3	nCS-
2	GND
7	5V
4	DIAG_IN_OUT-
12	DIAG_IN_OUT+
5	SCLOCK_OUT-
13	SCLOCK_OUT+
6	SDATA_OUT-
14	SDATA_OUT+
8	5V
9	GND
10	SCLOCK_IN+
11	SCLOCK_IN-
15	ALARM

Cable Lengths
1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

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Division of GSI Group

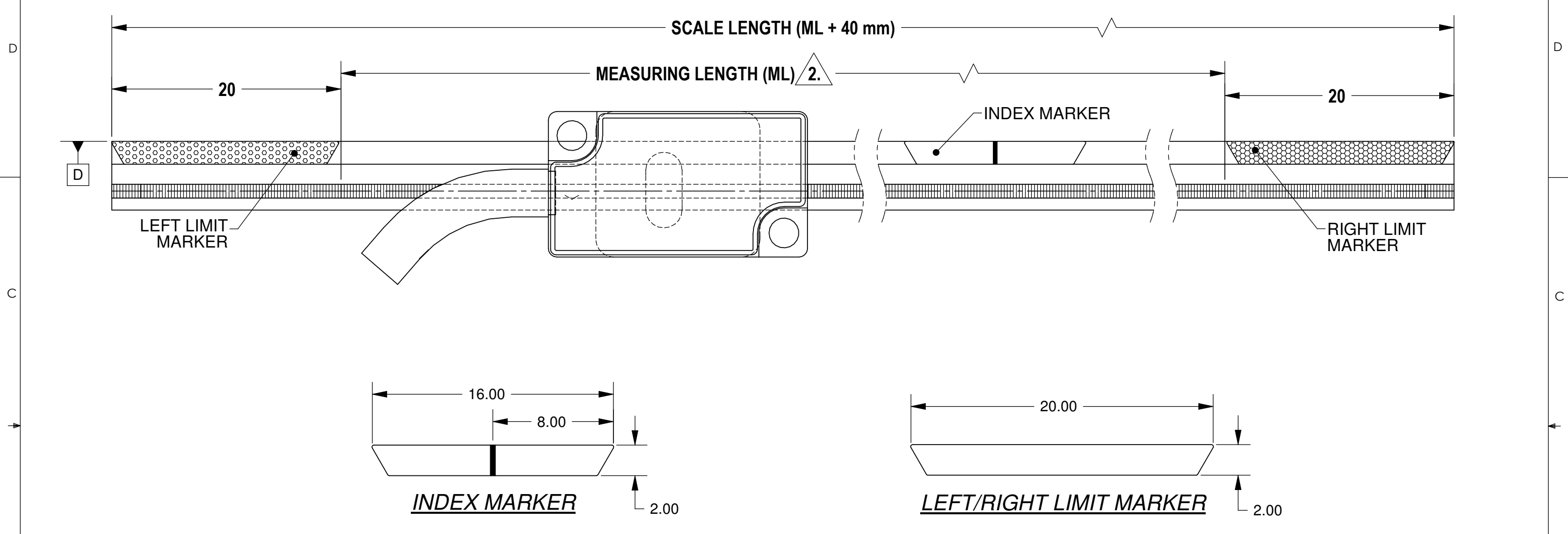
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20 um SHORT LINEAR w/ STICK-ON INDEX AND LIMITS, MERCURY II 6000 SENSOR

SIZE B	DWG. NO. ID-00368	REV. A
SCALE:	CAD FILE:	3rd ANGLE PROJECTION SHEET 2 OF 3

8 7 6 5 4 3 2 1

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NOTES:

1. APPLICABLE LINEAR GLASS SCALE LENGTHS 70-130 mm. FOR SCALE LENGTHS SHORTER THAN 70 mm, CONTACT MICROE SYSTEMS.
2. MINIMUM MEASURING LENGTH SHOWN. ACTUAL MEASURING LENGTH MAY BE GREATER.
3. NOTE DATUM EDGE OF GLASS SCALE AND REFERENCE MARKER REGION BEFORE APPLYING MARKERS.
4. INDEX AND LIMIT MARKERS ARE OPTIONAL (SEE INSTALLATION MANUAL). WHEN NO LIMITS ARE USED, RECOMMENDED SCALE LENGTH = MEASURING LENGTH + 5 mm.
5. INDEX AND LIMIT MARKERS SHALL NOT OVERLAP (WILL CAUSE INTERFERENCE WITH SENSOR).
6. FOR OTHER LENGTHS OF REFERENCE MARKERS, CONTACT MICROE SYSTEMS.
7. INDEX AND LIMIT MARKERS MAY BE PRINTED ON GLASS SCALES AT LOCATIONS SPECIFIED BY THE CUSTOMER. CONTACT MICROE SYSTEMS FOR DETAILS.

UNITS: mm

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125 Middlesex Tpk.
Bedford, MA 01730

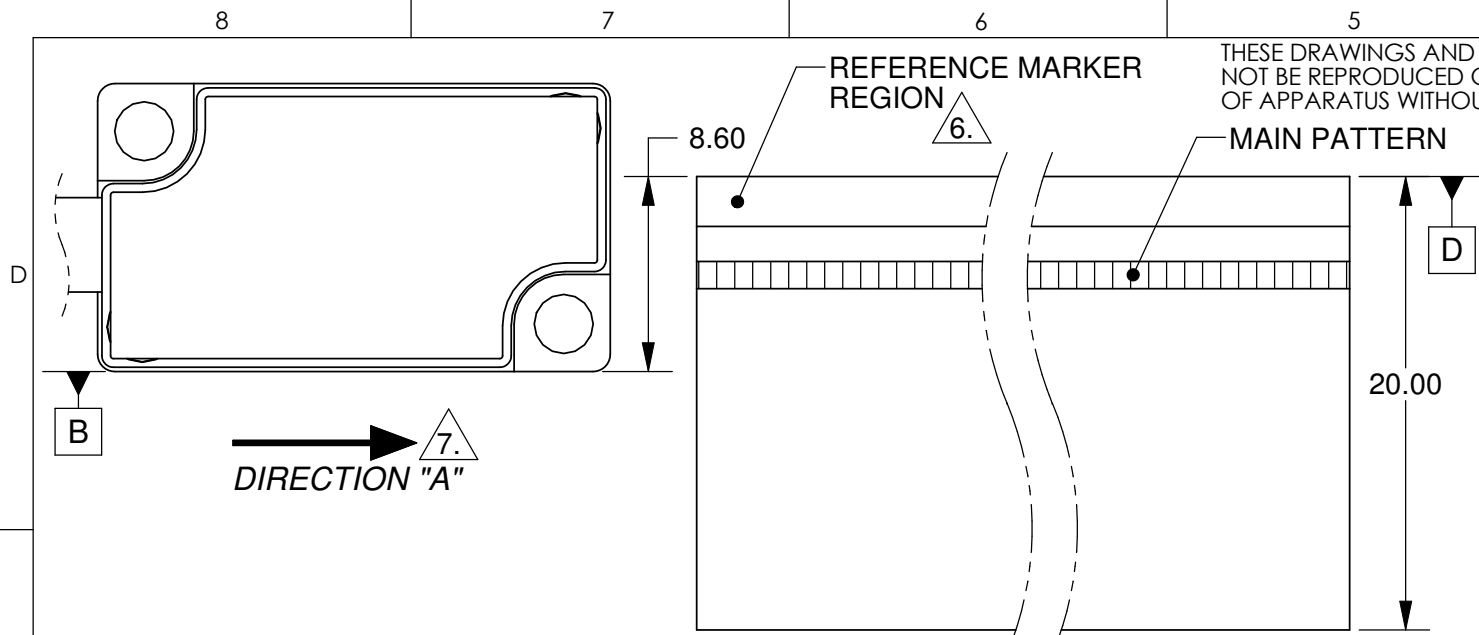
DESCRIPTION: INTERFACE, ENCODER, 20 um
SHORT LINEAR w/ STICK-ON
INDEX AND LIMITS,
MERCURY II 6000 SENSOR

SIZE B	DWG. NO. ID-00368	REV. A
SCALE:	CAD FILE:	3rd ANGLE PROJECTION SHEET 3 OF 3

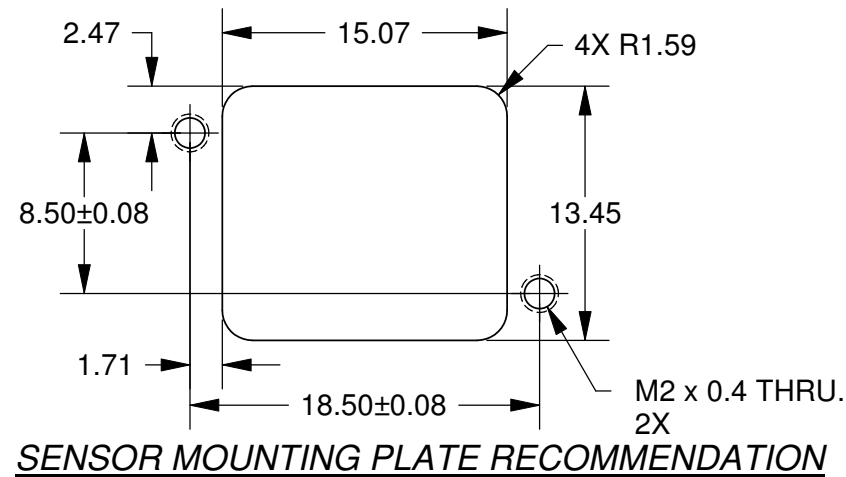
8 7 6 5 4 3 2 1

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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
1	----	INITIAL	9/29/09	VB
A	2297	CHANGED REFERENCE MARKERS, REVISED NOTES, RELEASE TO PRODUCTION	3/30/11	VB



LINEAR GLASS SCALE SHOWN IN THIS VIEW TRANSLATED IN X-AXIS OUT OF OPERATING RANGE FOR CLARITY

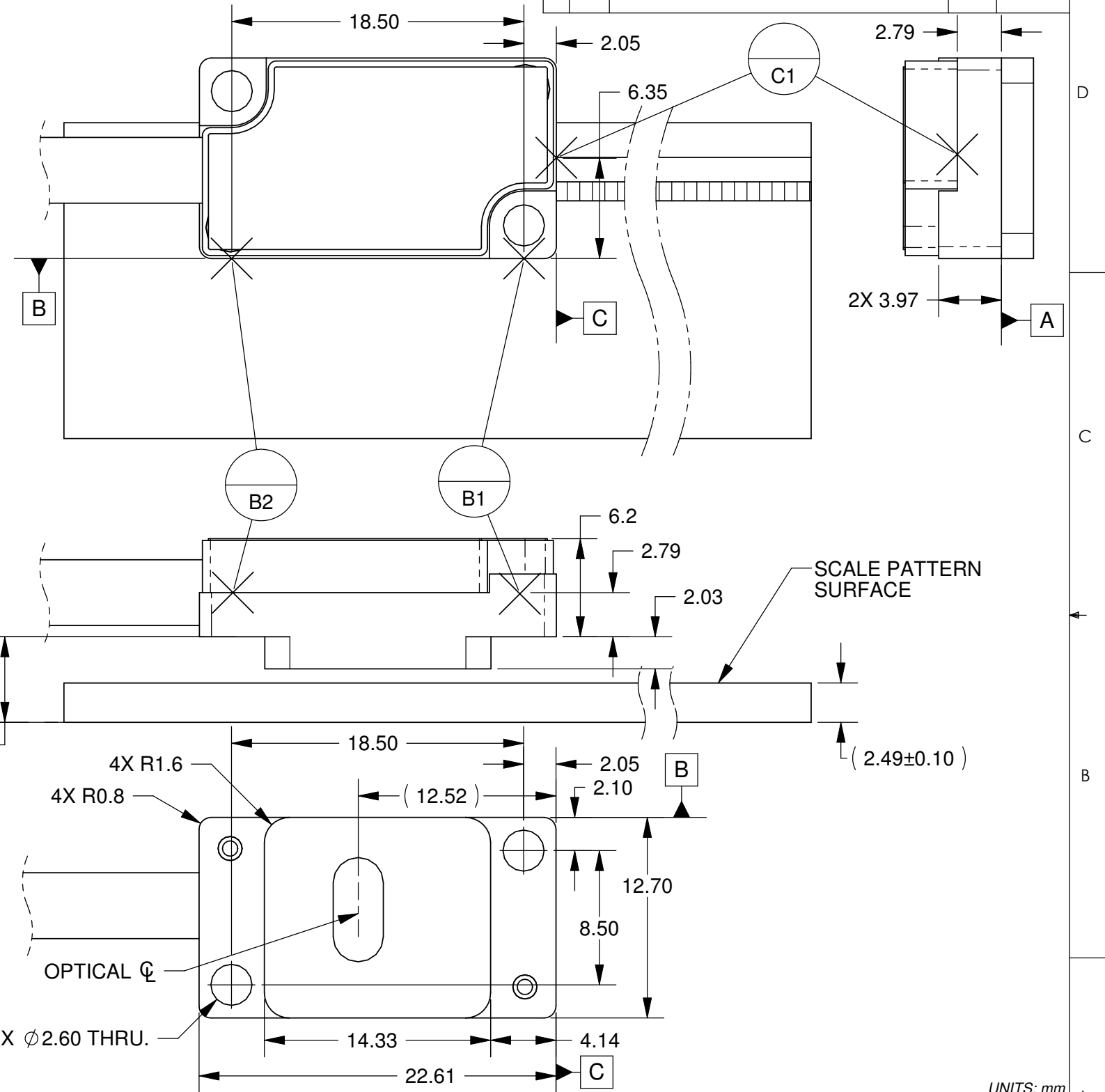


SENSOR MOUNTING PLATE RECOMMENDATION

- NOTES:**
1. RECOMMENDED MOUNTING HARDWARE:
M2 x 6 mm SOCKET HEAD CAP SCREWS.
 2. IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT. (REFERENCE DATUMS B1, B2 AND C1).
 3. HEIGHT OF SENSOR BENCHING PINS MUST NOT EXCEED HEIGHT OF SENSOR BODY (2.79 mm).
 4. HEIGHT OF SCALE BENCHING PINS NOT TO EXCEED THE THICKNESS OF THE SCALE.
 5. RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).

6. SEE SHEET 3 FOR DIMENSIONS AND LOCATIONS OF REFERENCE MARKERS.

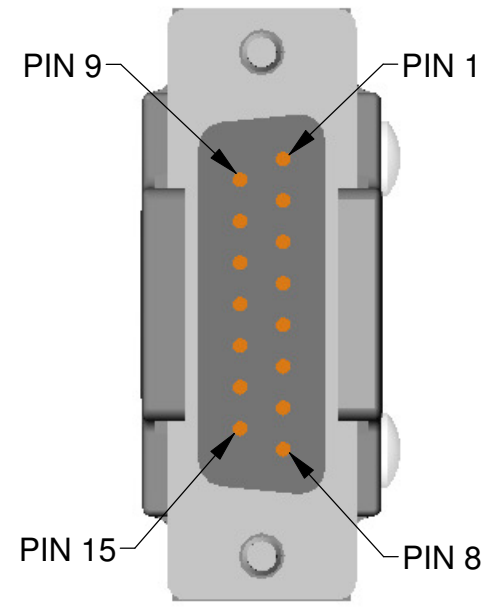
7. WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+ (PIN 14) LEADS OUTPUT SIGNAL B+ (PIN 13). THIS APPLIES TO QUADRATURE SENSOR ONLY.



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994 TOLERANCES ARE: DECIMALS: X ± .25 XX ± .13 ANGULAR: ±30 MIN.	APPROVALS	DATE	 MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730 DESCRIPTION: INTERFACE, ENCODER, 20 um LONG LINEAR w/STICK-ON INDEX AND LIMITS, MERCURY II 6000 SENSOR
	DRAWN S.BUTURLIA	9/21/09	
	CHECKED		
	ENGRG. A.GOLDMAN	3/28/11	
	MFG ENG D.MCLOUGHLIN	3/28/11	
	QA A.VILLARROEL	3/29/11	
SUBJECT TO CHANGE WITHOUT NOTIFICATION			SIZE B DWG. NO. ID-00369 REV. A SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 1 OF 3

UNITS: mm

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SEE TABLES 2 AND 3 FOR PIN FUNCTIONS

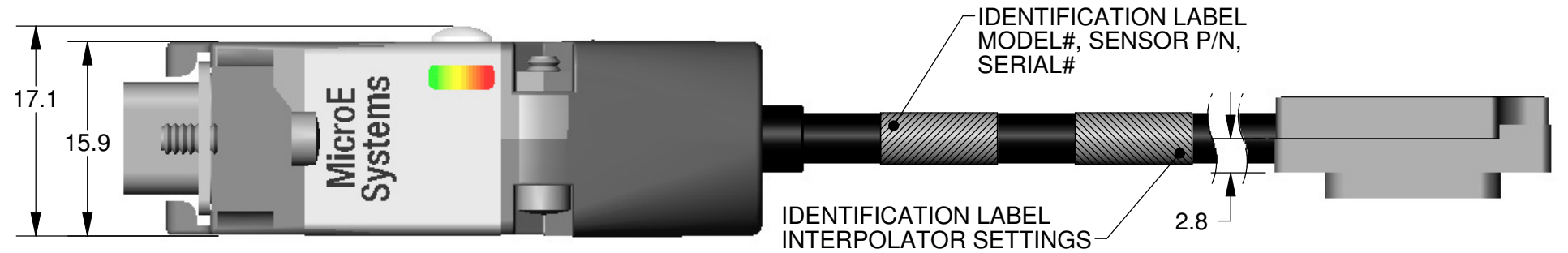
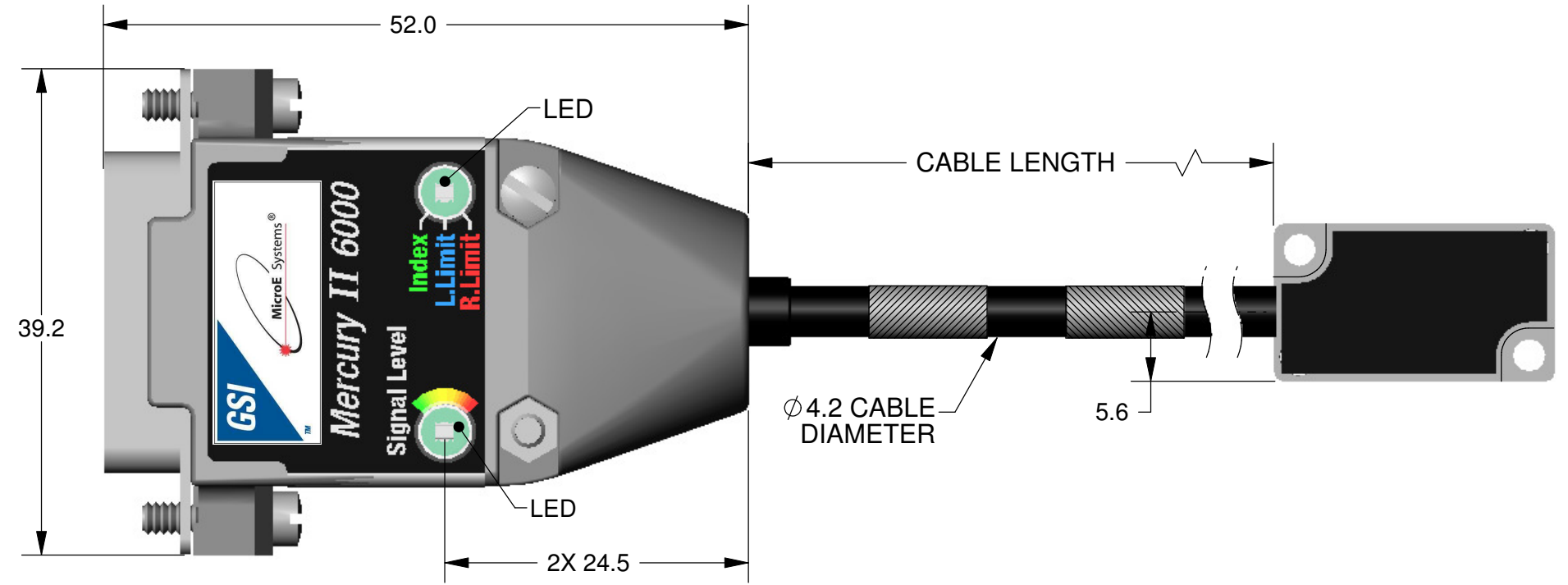


TABLE 2.

Mercury II 6000 15-Plug Quadrature Output

Pin	Function
1	RL+
3	RL-
2	GND
7	5V
4	I-
12	I+
5	B-
13	B+
6	A-
14	A+
8	5V
9	GND
10	LL+
11	LL-
15	ALARM

TABLE 3.

Mercury II 6000 15-Plug Serial Output

Pin	Function
1	nCS+
3	nCS-
2	GND
7	5V
4	DIAG_IN_OUT-
12	DIAG_IN_OUT+
5	SCLOCK_OUT-
13	SCLOCK_OUT+
6	SDATA_OUT-
14	SDATA_OUT+
8	5V
9	GND
10	SCLOCK_IN+
11	SCLOCK_IN-
15	ALARM

Cable Lengths

1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

GSI MicroE Systems
Division of GSI Group

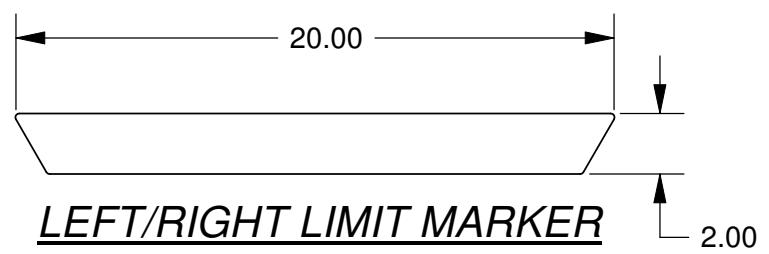
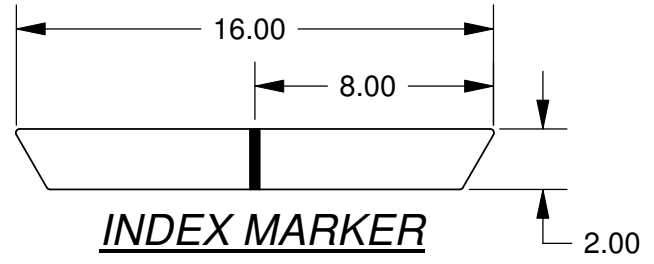
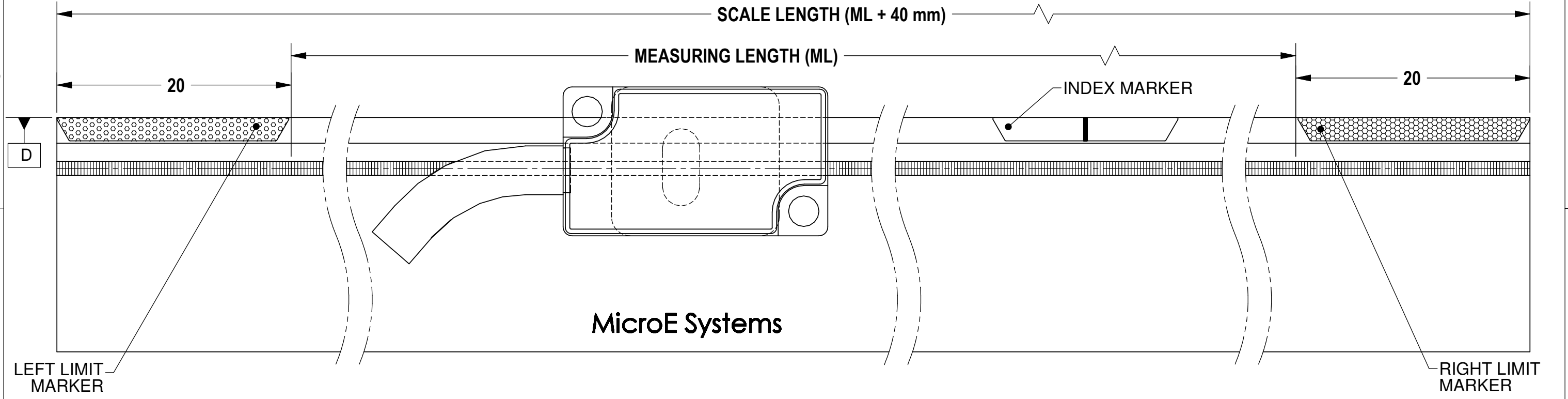
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20 um LONG LINEAR w/STICK-ON INDEX AND LIMITS, MERCURY II 6000 SENSOR

SIZE B	DWG. NO. ID-00369	REV. A
SCALE:	CAD FILE:	3RD ANGLE PROJECTION SHEET 2 OF 3

8 7 6 5 4 3 2 1

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- NOTES:
1. APPLICABLE LINEAR GLASS SCALE LENGTHS 131-1000 mm. FOR SCALE LENGTHS LONGER THAN 1000 mm, CONTACT MICROE SYSTEMS.
 2. MINIMUM MEASURING LENGTH SHOWN. ACTUAL MEASURING LENGTH MAY BE GREATER.
 3. NOTE DATUM EDGE OF GLASS SCALE AND REFERENCE MARKER REGION BEFORE APPLYING MARKERS.
 4. INDEX AND LIMIT MARKERS ARE OPTIONAL (SEE INSTALLATION MANUAL). WHEN NO LIMITS ARE USED, RECOMMENDED SCALE LENGTH = MEASURING LENGTH + 5 mm.
 5. INDEX AND LIMIT MARKERS SHALL NOT OVERLAP (WILL CAUSE INTERFERENCE WITH SENSOR).
 6. FOR OTHER LENGTHS OF REFERENCE MARKERS, CONTACT MICROE SYSTEMS.
 7. INDEX AND LIMIT MARKERS MAY BE PRINTED ON GLASS SCALES AT LOCATIONS SPECIFIED BY THE CUSTOMER. CONTACT MICROE SYSTEMS FOR DETAILS.

UNITS: mm

GSI *MicroE Systems*
Division of GSI Group

125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20 um LONG LINEAR w/STICK-ON INDEX AND LIMITS, MERCURY II 6000 SENSOR

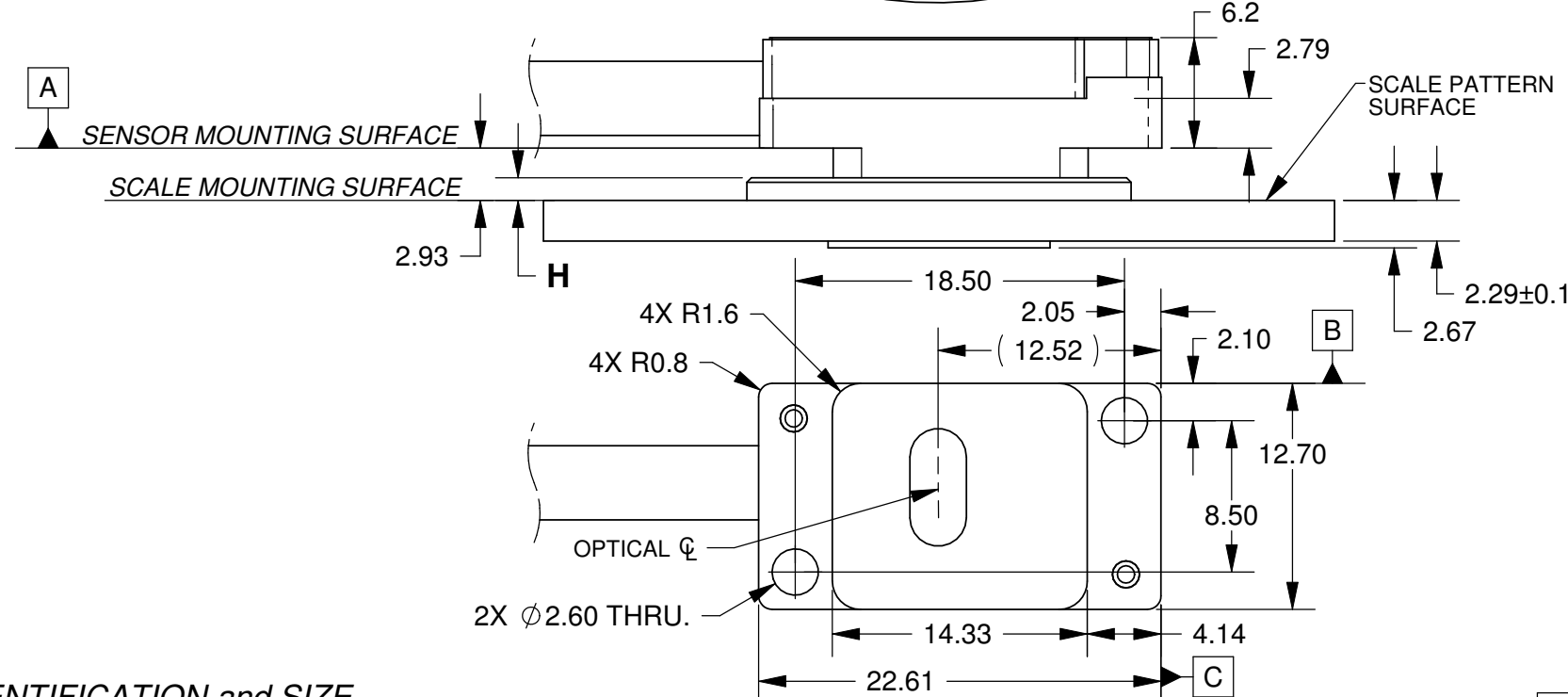
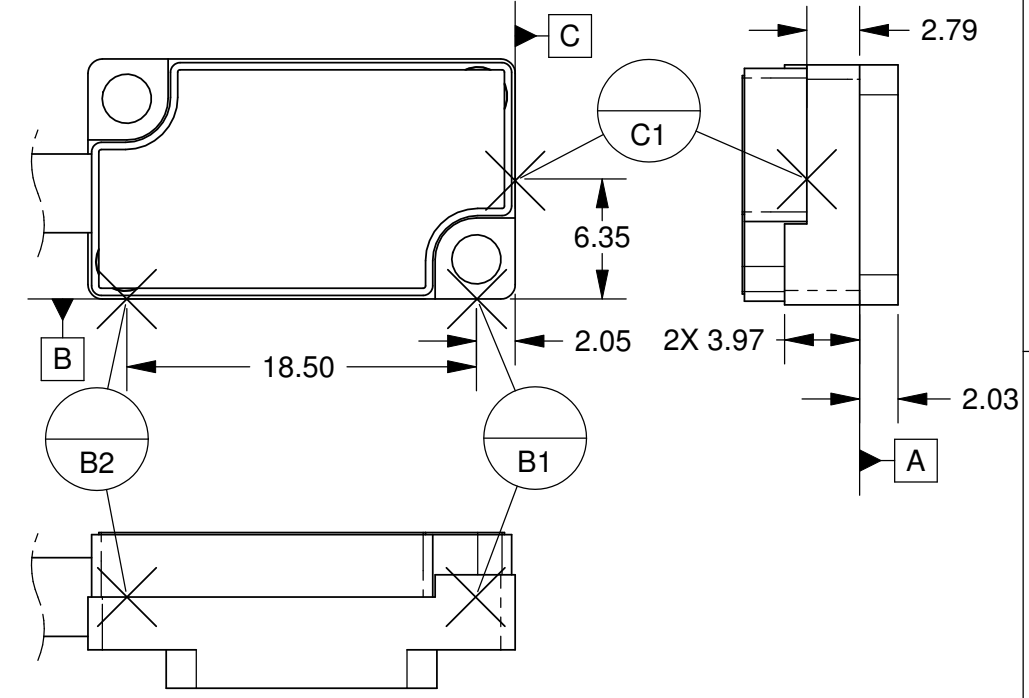
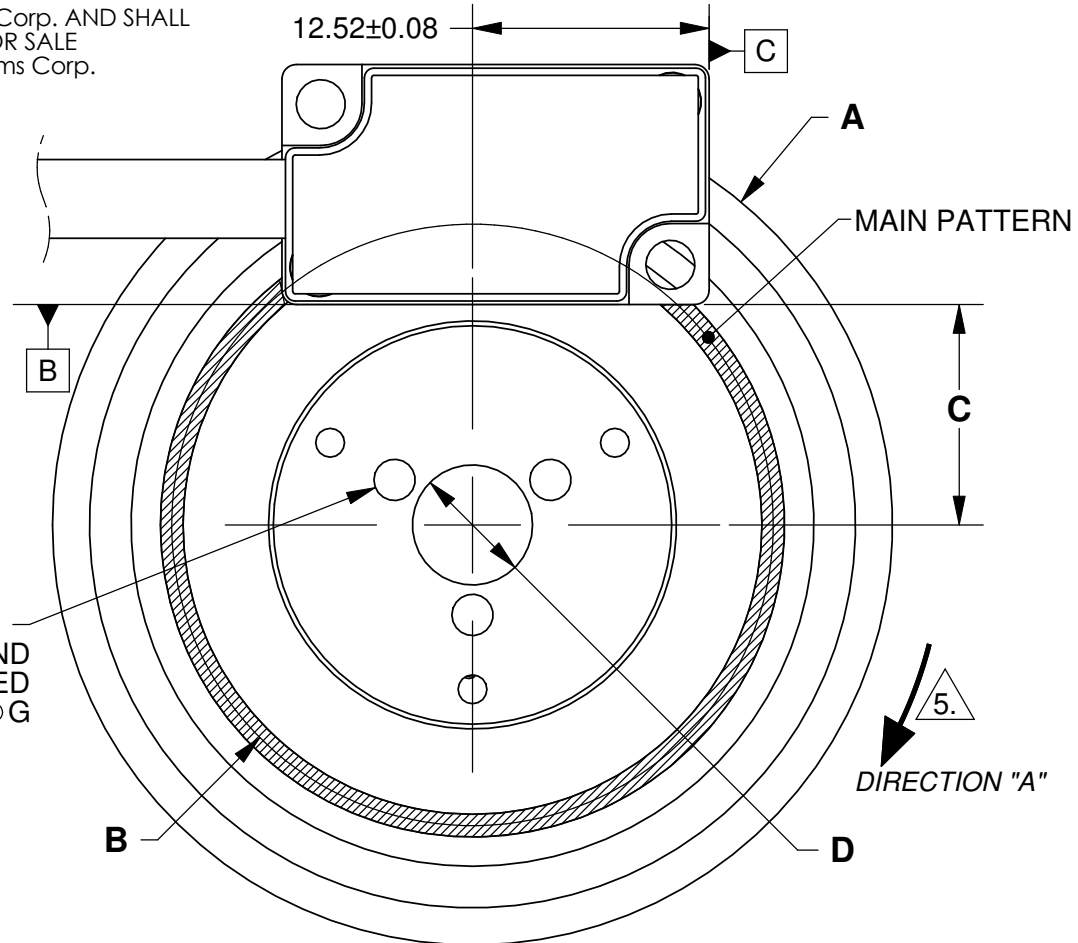
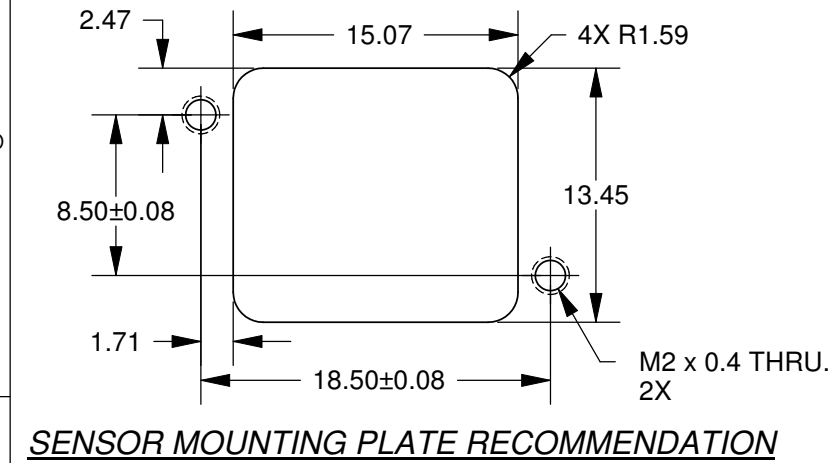
SIZE	DWG. NO.	REV.
B	ID-00369	A

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 3 OF 3

8 7 6 5 4 3 2 1

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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
1	---	INITIAL	9/29/09	VB
2	2262	CENTER TO EDGE OF SENSOR BODY DATUM C INCORRECT, WAS 11.19	8/11/10	VB
A	2297	REVISED NOTES, RELEASE TO PRODUCTION	3/30/11	VB



- NOTES:**
- RECOMMENDED MOUNTING HARDWARE:
M2 x 6 mm SOCKET HEAD CAP SCREWS
 - IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT. (REFERENCE DATUMS B1, B2 AND C1).
 - HEIGHT OF SENSOR BENCHING PINS MUST NOT EXCEED HEIGHT OF SENSOR BODY (2.79 mm).
 - RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).
 - WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+ (PIN 14) LEADS OUTPUT SIGNAL B+ (PIN 13). THIS APPLIES TO QUADRATURE SENSOR ONLY.

SCALE/HUB IDENTIFICATION and SIZE

Scale/Hub Identification	Counts/Rev	Dim. A Scale O.D.	Scale I.D.	Dim. B Optical Dia.	Dim. C Mounting Dim.	Dim. D Hub I.D.	Dim. E Mntg Hole Dia.	Thread F	Dim. G Bolt Circle	Dim. H Hub Height
R4513 / HI	5,000	44.45	12.70+/-0.13	31.83	11.66+/-0.05	6.358+0.013/-0.000	1.78	2-56	9.53	1.27
R6425 / HJ	8,192	63.50	25.40+/-0.13	52.15	21.82+/-0.05	12.708+0.013/-0.000	3.45	8-32	19.05	1.52
R12151 / HK	16,384	120.65	50.80+/-0.13	104.30	47.90+/-0.05	25.408+0.013/-0.000	3.45	8-32	38.10	2.03

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994

TOLERANCES ARE:
DECIMALS: .X ± .25
.XX ± .13

ANGULAR: ±30 MIN.

APPROVALS

DRAWN	S.BUTURLIA	DATE	9/21/09
CHECKED			
ENGRG.	A.GOLDMAN	DATE	3/28/11
MFG ENG	D.MCLOUGHLIN	DATE	3/28/11
QA	A.VILLARROEL	DATE	3/29/11

MicroE Systems
Division of GSI Group

125 Middlesex Tpk.
Bedford, MA 01730

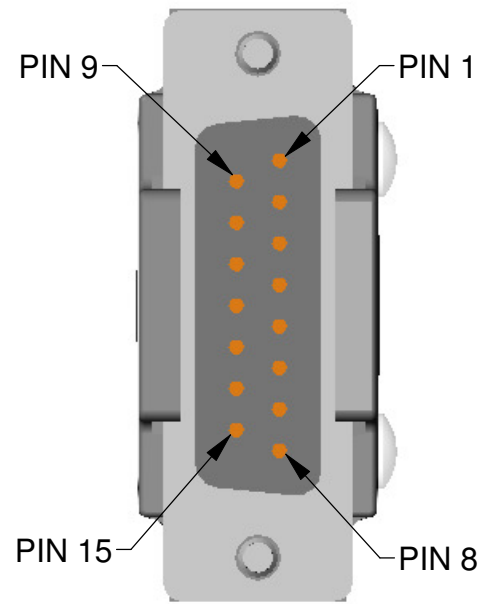
DESCRIPTION:
INTERFACE, ENCODER, 20 µm
ROTARY SCALE w/INDEX and HUB,
MERCURY II 6000 SENSOR

SIZE B DWG. NO. ID-00370 REV. A

SUBJECT TO CHANGE WITHOUT NOTIFICATION

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 1 OF 2

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SEE TABLES 2 AND 3 FOR PIN FUNCTIONS

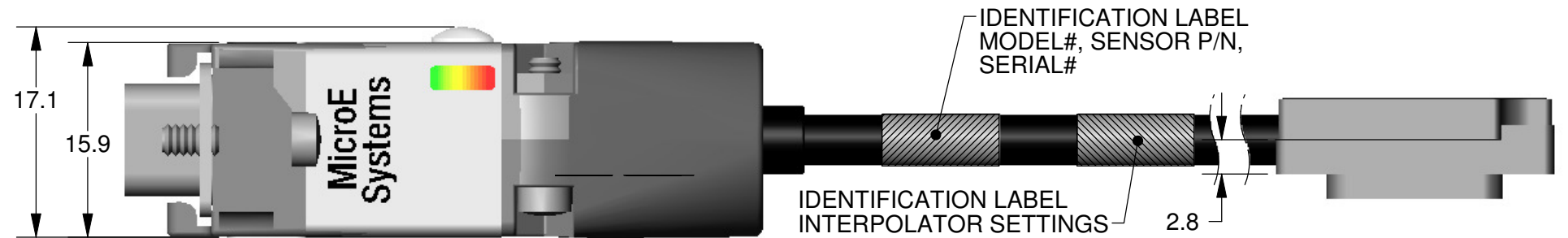
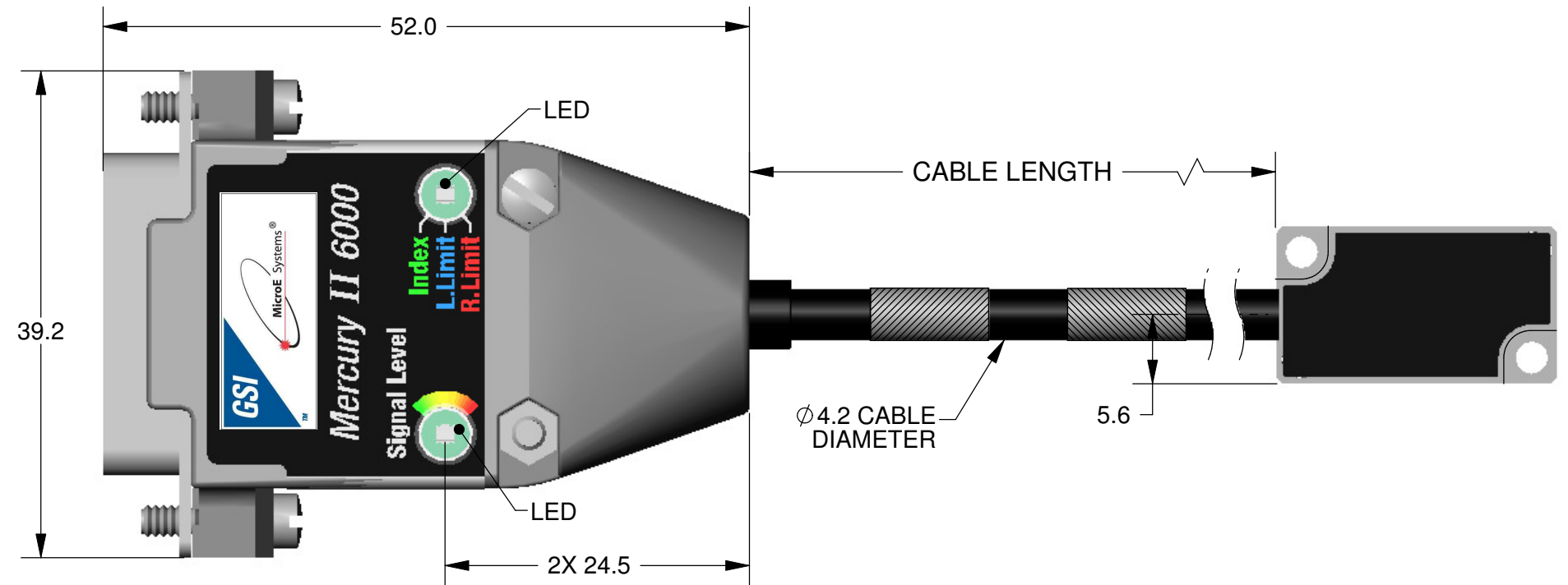


TABLE 2.

Mercury II 6000 15-Plug Quadrature Output

Pin	Function
1	RL+
3	RL-
2	GND
7	5V
4	I-
12	I+
5	B-
13	B+
6	A-
14	A+
8	5V
9	GND
10	LL+
11	LL-
15	ALARM

TABLE 3.

Mercury II 6000 15-Plug Serial Output

Pin	Function
1	nCS+
3	nCS-
2	GND
7	5V
4	DIAG_IN_OUT-
12	DIAG_IN_OUT+
5	SCLOCK_OUT-
13	SCLOCK_OUT+
6	SDATA_OUT-
14	SDATA_OUT+
8	5V
9	GND
10	SCLOCK_IN+
11	SCLOCK_IN-
15	ALARM

Cable Lengths
1 Meter
3 Meter
5 Meter
Custom

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DESCRIPTION:
INTERFACE, ENCODER, 20 um
ROTARY SCALE w/INDEX and HUB,
MERCURY II 6000 SENSOR

SIZE DWG. NO. REV.
B ID-00370 A

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 2 OF 2