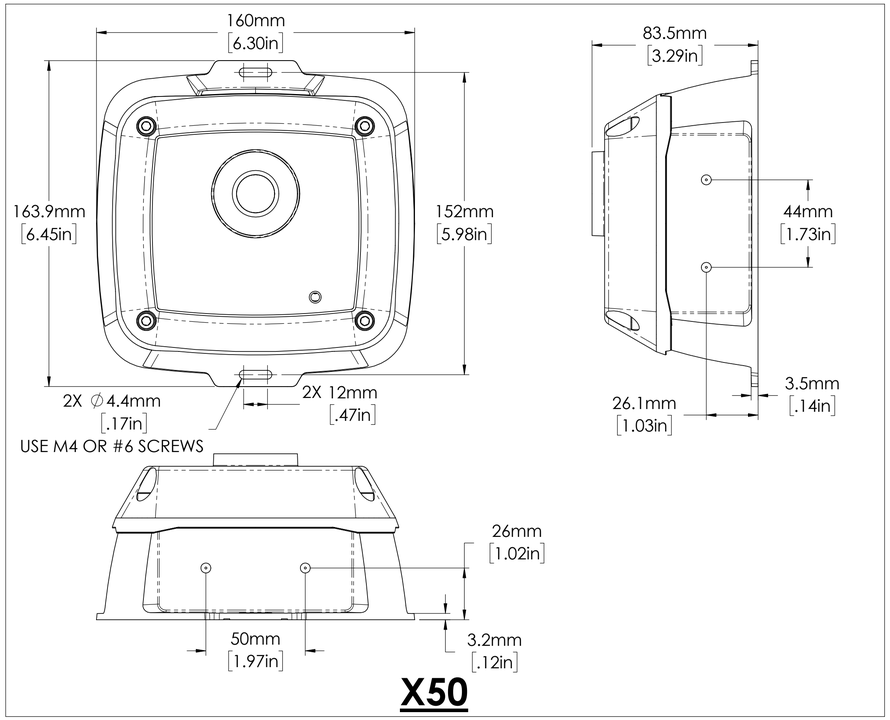
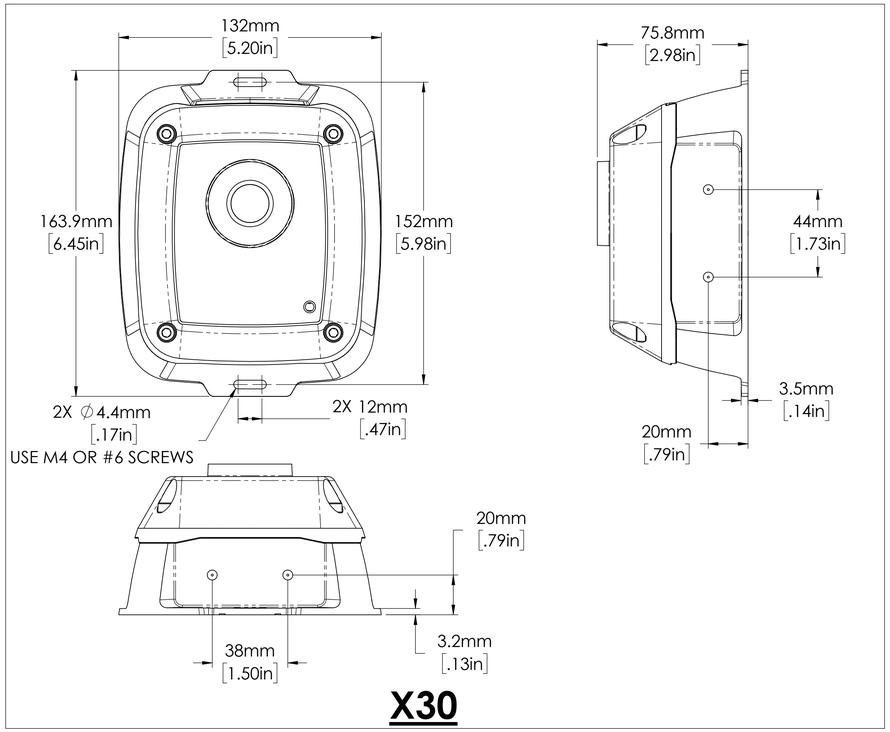
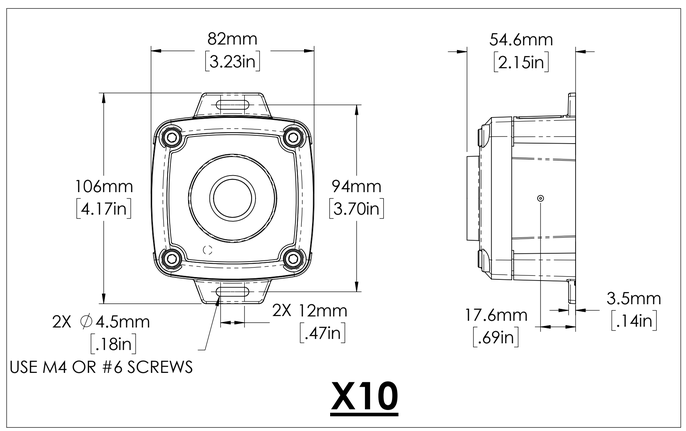


X50



X30



X10

MSA PART NUMBER	DESCRIPTION
10254037	X50 REFRIGERANT MONITOR, SC, BB GRP 1
10254034	X50 REFRIGERANT MONITOR, SC, BB GRP 2
10254035	X50 REFRIGERANT MONITOR, SC, BB GRP 3
10254036	X50 REFRIGERANT MONITOR, SC, BB GRP 4
10254038	X50 REFRIGERANT MONITOR, NDIR, CO2 5KPPM
10254149	X50 REFRIGERANT MONITOR, NDIR, CO2 10K
10254150	X50 REFRIGERANT MONITOR, NDIR, CO2 20K
10254039	X50 REFRIG MONITOR TRANSMITTER BASE, NS
10254040	X30 REFRIGERANT MONITOR, SC, BB GRP 1
10254151	X30 REFRIGERANT MONITOR, SC, BB GRP 2
10254152	X30 REFRIGERANT MONITOR, SC, BB GRP 3
10254153	X30 REFRIGERANT MONITOR, SC, BB GRP 4
10254041	X30 REFRIGERANT MONITOR, NDIR, CO2 5KPPM
10254154	X30 REFRIGERANT MONITOR, NDIR, CO2 10K
10254155	X30 REFRIGERANT MONITOR, NDIR, CO2 20K
10254042	X10 REMOTE RFG. SENSOR, SC, BB GRP 1
10254156	X10 REMOTE RFG. SENSOR, SC, BB GRP 2
10254157	X10 REMOTE RFG. SENSOR, SC, BB GRP 3
10254158	X10 REMOTE RFG. SENSOR, SC, BB GRP 4
10254043	X10 REMOTE RFG. SENSOR, NDIR, CO2 5KPPM
10254159	X10 REMOTE RFG. SENSOR, NDIR, CO2 10KPPM
10254160	X10 REMOTE RFG. SENSOR, NDIR, CO2 20KPPM
10254046	SPARE REFRIGERANT SENSOR, SC, BB GRP 1
10254161	SPARE REFRIGERANT SENSOR, SC, BB GRP 2
10254162	SPARE REFRIGERANT SENSOR, SC, BB GRP 3
10254163	SPARE REFRIGERANT SENSOR, SC, BB GRP 4
10254049	SPARE REFRIG. SENSOR, NDIR, CO2 5KPPM
10254164	SPARE REFRIG. SENSOR, NDIR, CO2 10KPPM
10254165	SPARE REFRIG. SENSOR, NDIR, CO2 20KPPM

TABLE 1
MAXIMUM SIZE CABLE GLANDS AND CONDUIT FITTINGS

INSTRUMENT	SIDE ENTRIES	BOTTOM ENTRIES
X10	CABLE GLANDS: M16 (EMT) CONDUIT FITTING: 1/2" NPT	NONE
X30	CABLE GLANDS: M20 CONDUIT FITTING: 1/2" NPT	CABLE GLANDS: M20 CONDUIT FITTING: 1/2" NPT
X50	CABLE GLANDS: M25 CONDUIT FITTING: 1/2" NPT	CABLE GLANDS: M25 CONDUIT FITTING: 3/4" NPT

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS [INCHES]

REVISIONS

LIFECYCLE STATE: **Production** | REVISION: **00**

MSA The Safety Company | www.MSAsafety.com

MSA STANDARD SHOP PRACTICES APPLY

THIS DRAWING IS THE PROPERTY OF MSA - THE SAFETY COMPANY AND IS MADE AVAILABLE TO YOU IN CONFIDENCE AND SUBJECT TO THE FOLLOWING: NO PERMISSION IS GRANTED TO PUBLISH, USE, REPRODUCE, TRANSMIT OR DISCLOSE THIS DRAWING, OR ANY INFORMATION CONTAINED THEREIN TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF MSA - THE SAFETY COMPANY EXCEPT FOR THE MANUFACTURE OF ARTICLES FOR MSA - THE SAFETY COMPANY.

THIRD-ANGLE PROJECTION | DO NOT SCALE DWG.

JOB NO. 800000073625 | APPROVAL AGENCY CODE: | NIOSH ATTR. DOC.:

DRAWN BY	J.SCHIRM	07/24/25
CHECKED BY	B.COOK	12/02/25
PROJECT ENGR.	N.MCCLOSKEY	01/08/26
QUALITY ASSURANCE	J.MONAGHAN	01/06/26
MANUFACTURING	C.HEALION	01/06/26

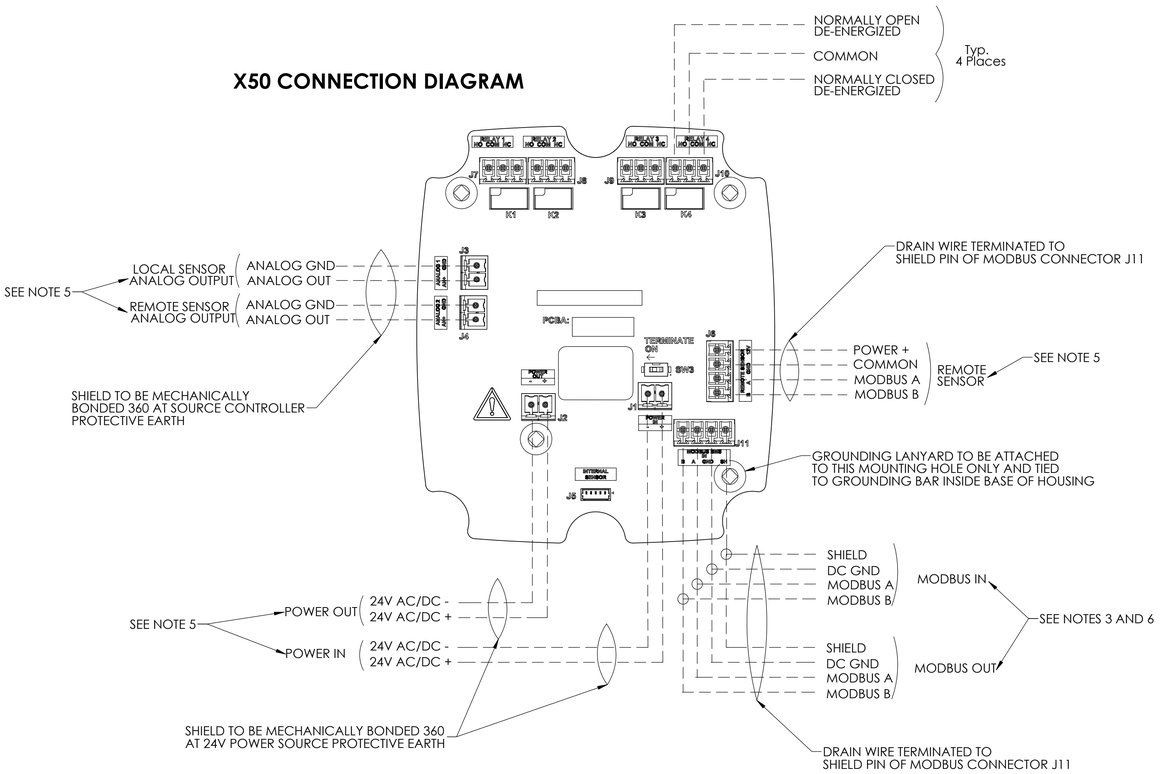
INSTALLATION OUTLINE, X10/X30/X50

CADD REF: 10254037 | SCALE: 1:2

SHEET SIZE **D** | **SK3015-1076** | SHEET 1 OF 3

CONNECTION DIAGRAM

X50 CONNECTION DIAGRAM



X30 CONNECTION DIAGRAM

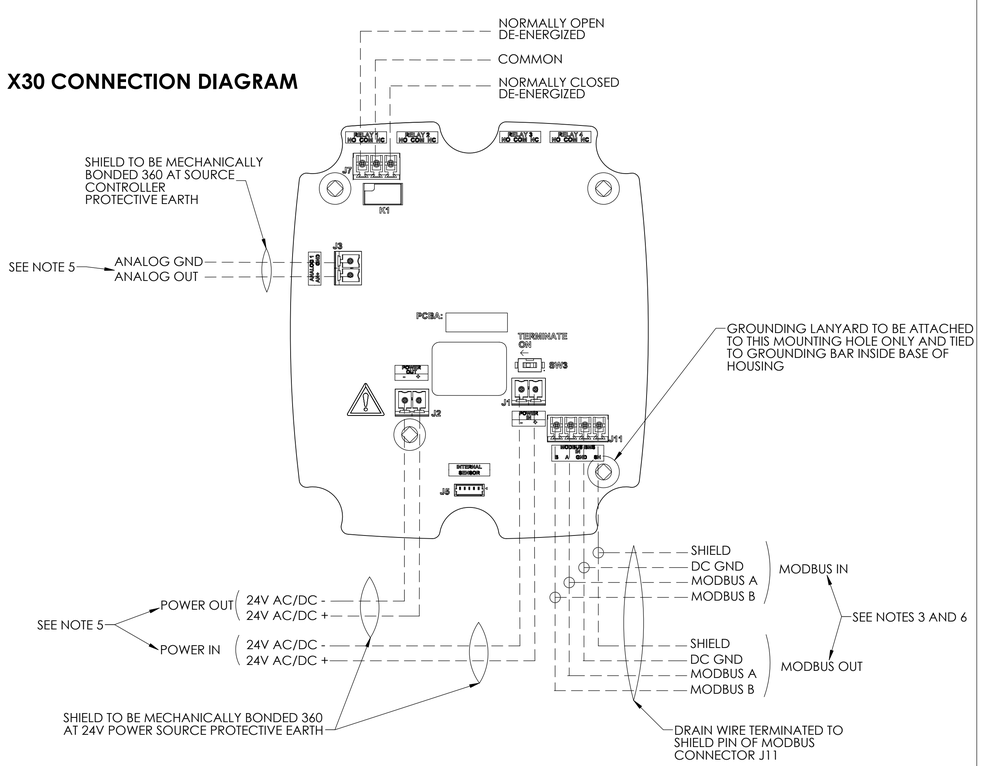


TABLE 2 RELAY FUNCTIONS	
X50	
RELAY 1	LOW ALARM
RELAY 2	HIGH ALARM
RELAY 3	FAULT
RELAY 4	USER CONFIGURABLE
X30	
RELAY 1	LOW ALARM, HIGH ALARM, FAULT

NOTES:

1. MAXIMUM LINE LENGTH FOR RS-485 IS ~ 1200m [3937 FT]
2. ISOLATION BETWEEN EACH GROUND POTENTIAL (24V AC/DC -, ANALOG GND, DC GND, PROTECTIVE EARTH) MUST BE MAINTAINED WHEN WIRING DEVICE
3. CONNECT INCOMING AND OUTGOING MODBUS WIRES TOGETHER IN J11 TERMINAL BLOCK IF DAISY-CHAINING
4. DO NOT CONNECT HALF-WAVE RECTIFIED DEVICES ON THE SAME AC POWER SUPPLY CIRCUIT AS AN X30 OR X50. DOES NOT APPLY FOR DC. SEE MANUAL FOR DETAILS
5. RECOMMEND ALPHA WIRE 324x SERIES OR EQUIVALENT
6. RECOMMEND BELDEN 3106A OR EQUIVALENT
7. TURN SW3 TERMINATION RESISTOR SWITCH TO ON FOR SINGLE BOARD OR FINAL BOARD IN CHAIN ONLY

REVISIONS

LIFECYCLE STATE: Production | REVISION: 00

MSA The Safety Company | www.MSAsafety.com

MSA STANDARD SHOP PRACTICES APPLY

THIS DRAWING IS THE PROPERTY OF MSA - THE SAFETY COMPANY AND IS MADE AVAILABLE TO YOU IN CONFIDENCE AND SUBJECT TO THE FOLLOWING: NO PERMISSION IS GRANTED TO PUBLISH, USE, REPRODUCE, TRANSMIT OR DISCLOSE THIS DRAWING, OR ANY INFORMATION CONTAINED THEREIN TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF MSA - THE SAFETY COMPANY EXCEPT FOR THE MANUFACTURE OF ARTICLES FOR MSA - THE SAFETY COMPANY.

THIRD-ANGLE PROJECTION | DO NOT SCALE DWG.

JOB NO. 800000073625 | APPROVAL AGENCY CODE: | NIOSH ATTR. DOC.:

DRAWN BY	J.SCHIRM	07/24/25
CHECKED BY	B.COOK	12/02/25
PROJECT ENGR.	N.MCCLOSKEY	01/08/26
QUALITY ASSURANCE	J.MONAGHAN	01/06/26
MANUFACTURING	C.HEALION	01/06/26

INSTALLATION OUTLINE, X10/X30/X50

CADD REF: | SCALE: 2:1

SHEET SIZE D | SK3015-1076 | SHEET 2 OF 3

WIRING DISTANCES FROM POWER SUPPLY TO TRANSMITTER

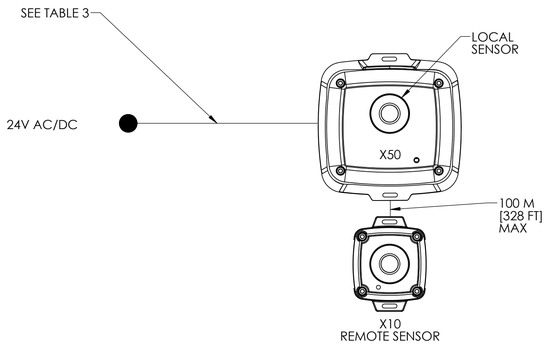


TABLE 3
SINGLE X50 TRANSMITTER MAX LINE LENGTH FOR POWER

SENSOR 1	SENSOR 2	MAX DISTANCE TO TRANSMITTER, M [FT] 24V AC/DC SUPPLY +- 20%		
		0.50 mm^2	0.75 mm^2	1.5 mm^2
NDIR (CO2)	-	129 [425]	213 [700]	335 [1100]
MOS (R-GAS)	-	304 [1000]	487 [1600]	761 [2500]
NDIR (C02)	NDIR (C02)	99 [325]	160 [525]	259 [850]
NDIR (C02)	MOS (R-GAS)	259 [850]	419 [1375]	640 [2100]
MOS (R-GAS)	MOS (R-GAS)	129 [425]	205 [675]	304 [1000]

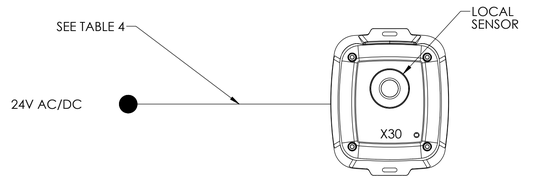


TABLE 4
SINGLE X30 TRANSMITTER MAX LINE LENGTH FOR POWER

SENSOR	MAX DISTANCE TO TRANSMITTER, M [FT] 24V AC/DC SUPPLY +- 20%		
	0.50 mm^2	0.75 mm^2	1.5 mm^2
NDIR (CO2)	182 [600]	274 [900]	457 [1500]
MOS (R-GAS)	548 [1800]	853 [2800]	1371 [4500]

INDIVIDUALLY WIRED X30 OR X50 TRANSMITTER

TABLE 5
DETECTOR LOAD

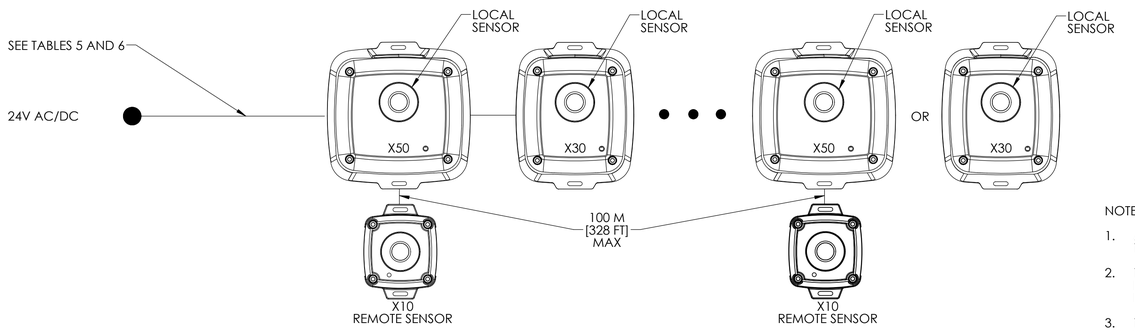
X50			X30	
SENSOR 1	SENSOR 2	POWER (W)	SENSOR	POWER (W)
NDIR (CO2)	-	10	NDIR (CO2)	8
MOS (R-GAS)	-	5	MOS (R-GAS)	3
NDIR (CO2)	NDIR (CO2)	14		
NDIR (CO2)	MOS (R-GAS)	11		
MOS (R-GAS)	MOS (R-GAS)	6		

SEE NOTE 1

TABLE 6
MAX LINE LENGTH FOR POWERING MULTIPLE DEVICES

TOTAL DETECTOR LOAD [W]	MAX DISTANCE TO TRANSMITTER, M [FT] 24V AC/DC SUPPLY +- 20%		
	0.50 mm^2	0.75 mm^2	1.5 mm^2
5	335 [1100]	548 [1800]	914 [3000]
10	182 [600]	281 [925]	457 [1500]
15	121 [400]	190 [625]	304 [1000]
20	91 [300]	144 [475]	228 [750]
25	68 [225]	114 [375]	182 [600]
30	60 [200]	91 [300]	152 [500]
35	53 [175]	76 [250]	121 [400]
40	45 [150]	68 [225]	114 [375]
45	38 [125]	60 [200]	99 [325]

SEE NOTE 2



DAISY-CHAINED X50 OR X30 TRANSMITTERS

NOTES:

1. ADD TOTAL POWER REQUIREMENTS OF ALL BOARDS BASED ON THE TYPE AND NUMBER OF SENSORS USED
2. TABLE 4 IS BASED ON CALCULATED TOTAL LOAD FROM TABLE 3 FOR ALL TRANSMITTERS DOWNSTREAM OF THE POWER SOURCE. LENGTH IS TO THE FARTHEST BOARD
3. TOTAL POWER COMSUMPTION OF ALL DAISY-CHAINED (POWER PASSED THROUGH) TRANSMITTERS MUST NOT EXCEED RATED LOAD WATTAGE OF CONTROLLER OR POWER SUPPLY

REVISIONS

LIFECYCLE STATE: Production | REVISION: 00

MSA The Safety Company | www.MSAsafety.com | MSA STANDARD SHOP PRACTICES APPLY

THIS DRAWING IS THE PROPERTY OF MSA - THE SAFETY COMPANY AND IS MADE AVAILABLE TO YOU IN CONFIDENCE AND SUBJECT TO THE FOLLOWING: NO PERMISSION IS GRANTED TO PUBLISH, USE, REPRODUCE, TRANSMIT OR DISCLOSE THIS DRAWING, OR ANY INFORMATION CONTAINED THEREIN TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF MSA - THE SAFETY COMPANY EXCEPT FOR THE MANUFACTURE OF ARTICLES FOR MSA - THE SAFETY COMPANY.

THIRD-ANGLE PROJECTION | DO NOT SCALE DWG.

JOB NO. 800000073625 | APPROVAL AGENCY CODE: | NIOSH ATTR. DOC.:

DRAWN BY	J.SCHIRM	07/24/25
CHECKED BY	B.COOK	12/02/25
PROJECT ENGR.	N.MCCLOSKEY	01/08/26
QUALITY ASSURANCE	J.MONAGHAN	01/06/26
MANUFACTURING	C.HEALION	01/06/26

INSTALLATION OUTLINE, X10/X30/X50

CADD REF: | SCALE: 1:5

SHEET SIZE: D | SK3015-1076 | SHEET 3 OF 3