

SPECIFICATION FOR IOOS TEST BENCH ELECTRICAL COMPONENTS

TRANSNET ENGINEERING KILNER PARK

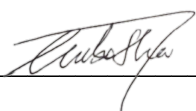
Engineer (SIAS):

Surname & Name: Mokgethi Karabo

Signature:  Date: 17/08/2023

Principal Engineer (SIAS):

Surname & Name: Mabotha Clifford

Signature:  Date: 17/08/2023

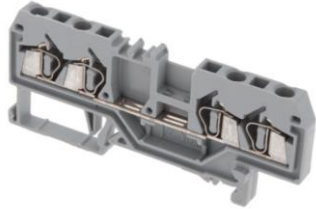
Chief Engineer (SIAS)

Surname & Name: Magae Otsile

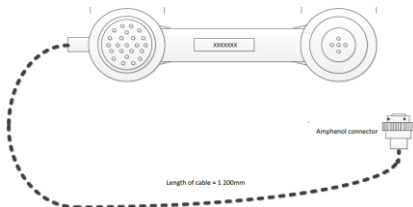
Signature:  Date: 17/08/2023

SPECIFICATION

No.	Item	Description	Manufacture Part no./ Supplier No	Total
POWER SUPPLIES				
1.	Programmable Power Supply	200VDC programmable single-phase (220V AC) input power supply	SL 200-7.5/UI+HS+LXI	11
2.	24V Output power supply	Mean Well Switching Power Supply - Output: 24V dc, 14.6A, 350W - Input: 180 → 264 Vac (By Switch), 240 → 370 Vac	LRS-350-24RS	11
3.	12V Output power supply	Mean Well Switching Power Supply - Output: 12V dc, 8.5A, 102W, 1 - Input: 125 → 373 V dc, 88 → 264 V ac	RS-100-12	11
ELECTRICAL/ELECTRONIC COMPONENTS				
4.	Ethernet switch	RS PRO DIN Rail Mount Ethernet Switch, 8 RJ45 Ports, 10/100Mbit/s Transmission	144-8674	11
5.	PoE injector	Single Port Gigabit POE Injector. Power Input: 9-48V Power Supply.		11
6.	Brainboxes mounting kit	Brainboxes Mounting Kit	MK-048	22
6.	Speaker	8Ω, 20W speaker	R 10 SC 8 OHM	11
7.	RJ45 connectors	Male RJ45 Connector	331-6386	2 packs (100 per pack)

8.	RJ45 dust cap	RS PRO Boot for use with RJ45 Connectors	201-0267	4 packs (10 per pack)
9.	Emergency switch	Schneider Electric Harmony XB4 Series Twist Release Emergency Stop Push Button, Panel Mount, 22mm Cutout, 1NC, IP66	XB4BS8442	11
10.	10A Circuit breaker	10A MCB Mini Circuit Breaker	2CDS272001R0101 S202M-D10	11
11.	Wago terminal block	Wago 280 Series Grey Feed Through Terminal Block, Clamp Termination. 4 Position Feed Through Gray 12-28 AWG 	280-833	440
12.	Wago terminal jumper	Wago 280 Series Adjacent Jumper for Use with DIN Rail Terminal Blocks 	280-402	220
13.	DIN mount 24V Relays	Wago, 24V dc Coil Non-Latching Relay, 10mA Switching Current DIN Rail Single Pole 	857-304	110
14.	DIN mount 12V relays	Wago, 12V dc Coil Non-Latching Relay, 17mA Switching Current DIN Rail Single Pole	857-303	24
15.	Screw On Power Inlet	Screw On Power Inlet • Fast-On Tab 6.3mm • 3 way	6100-33	12

				
16.	Kettle lead cable	1.8m 10A Black Kettle Lead with 3 pin SA Plug to IEC Socket	CONKTL LD 1,8M BLK	36
17.	PoE Switch Mode power supply	12 Volt Switched Mode Power Supply (PSU) for CCTV, HDD, Wifi AP 2.1mm DC jack size		11
18.	Multi adapter - plug	3m 4-way extension cord with (2 x 3 pin, 2 x 2 Euro pin)  OR similar		11
19.	USB to RS 232 cable	Easy-sync Male USB A to Male RS232 USB to Serial Converter Cable, USB 2.0, 1m	ES-U-1001-R100	15
MISCELLANEOUS COMPONENTS				
20.	Heat Shrink	Medium wall adhesive heat shrinks	AMWA28/6	10 metres
21.	Braided cable sleeve	Expandable Braided PET Black Cable Sleeve, 10mm Diameter.	408-209	220 metres
22.	Silicone sealant Clear	Alcolin Silicone Sealant - Clear (300ml)	6001743056501	5
23.	Insulation tape	Hellerman Insulation Tape - Black (10m)		10
24.	0.5mm ² bootlace ferrules	Insulated Crimp Bootlace Ferrule, 8mm Pin Length, 1.3mm Pin Diameter, 0.5mm ² Wire Size, White	458-689	11 packs (100 per pack)
25.	1.5mm ² bootlace ferrules	RS PRO Insulated Crimp Bootlace Ferrule, 8mm Pin Length, 2mm Pin Diameter, 1.5mm ² Wire Size, Red	178-7308	3 packs (100 per pack)

26.	Insulated Fork lugs	Insulated Crimp Spade Connector, 0.5mm ² to 1.5mm ² , 22AWG to 16AWG, M4 Stud Size	613-9479	2 packs (100 per pack)
27.	M8 Insulated Ring Terminal	RS PRO Insulated Ring Terminal, M8 Stud Size, 0.5mm ² to 1.5mm ² Wire Size, Red	208-2492	1 pack (100 per pack)
28.	Battery terminal receptacle	Insulated Crimp Receptacle, female, 6.3 x 0.8mm, 0.5mm ² to 1.5mm ² , 22AWG to 16AWG, Tin Plated. 	534-705	1 pack (100 per pack)
29.	Shrink sleeve label roll	Shrink sleeve, Roll, white, unlabeled	WMS 3,2 (15X5) R	3 packs (1000 per pack)
30.	Cable ties	Cable tie outside serrated, 200x4.6mm, Ø1.6-50.0mm, natural, 100pcs Outside serrated cable tie with smooth surface to the bundle	T50ROS-PA66HS-NA	10 packs (100 per pack)
31.	DIN rail	Slotted Top Hat Din Rail, 1m x 35mm x 7.5mm Standards DIN 607015, EN 60715.	467-416	32
32.	Drag Chains	Igus 6, e-chain Black Cable Chain - Flexible Slot, W30 mm x D10.5mm, L1m, 38 mm Min. Bend Radius, Igumid G	06.30.038	66
33.	Drag Chains accessories	Igus Polymer Cable Trunking Accessory, 37mm, 6, 7, e-chain	060.30.12PZ	66 packs (2 per pack)
34.	Handset device	Handset device with a 1200mm cable and an Amphenol 6 pin connector (male) with RUBBER CUP HOLDER 		11



DAQ SYSTEM

35.	4 slot cDAQ 9174 Chassis	Compact DAQ 4 slot, USB Chassis	cDAQ-9174	12
36.	9476 Digital Output Module	32 channel Sourcing Output module, C Series	9476 C Series Module	16
37.	9221 Analog Input Module	±60 V, 800 kS/s, 12-Bit, 8-Channel C Series Voltage	9221 C Series Module	11
38.	37 Channel Terminal Block	Pin female screw terminal with a 37-pin female D-SUB	9923	25
39.	Terminal block	National Instruments NI 9980 10-Pos Spring Terminal Connector Block for cDAQ	9980	15

CABLES

40.	Ultra-Flex Low Loss Coaxial Cable Black	Ultra-Flex Low Loss Coaxial Cable Black, LMR240 UF or Similar	LMR240 UF	350 metres
41.	Ethernet cable bundle	Cat 5 UTP Ethernet cable bundle	812-4781	150 metres
42.	Wiring cable	Red 0.5 mm ² Wire, Single-core halogen-free cable		500 metres
43.	Wiring cable	Black 0.5 mm ² Wire, Single-core halogen-free cable		200 metres

44.	Wiring cable	Red 1.5 mm ² Wire, Single-core halogen-free cable		100 metres
45.	Wiring cable	Black 1.5 mm ² Wire, Single-core halogen-free cable		100 metres
46.	Wiring cable	Green 1.5 mm ² Wire, Single-core halogen-free cable		10 metres
CONNECTORS				
47.	D38999 2-way Amphenol female	Circular MIL Spec Connector 2P PLG SZ 11 SKT CBL MNT	D38999/26WB02SN	15
48.	D38999 5-way Amphenol female connector	Circular MIL Spec Connector 5P size 11 Straight plug socket	D38999/26WB5SN	25
50.	Plug D38999 Ser. III	Circular MIL Spec Connector 6P size 11 straight plug pin.	D38999/26WB98PN	15
51.	Size 11 90° Back shell	Circular MIL Spec Strain Reliefs & Adapters RA BACKSHELL SZ 11 STRAIN RELIEF OD CAD • Mating style: Non-Self Locking • Shell material: Aluminium alloy • Shell style: Right angled	M85049/39-11W	46
52.	3-way Amphenol Female connector	Plug straight with threads (3-Way AMPHENOL FEMALE)	62IN-16F-8-33S	25
53.	8 PIN MIL Spec Male connector	Amphenol Circular MIL Spec Connector, with Back Shell plug	62IN-16F-12-8P	15
54.	7 PIN MIL Spec Female connector	Amphenol Circular MIL Spec Connector, 7 pin, Female, with Back Shell Plug 	62IN-16F-10-7S	15

55.	7 PIN MIL Spec Male connector	Amphenol Circular MIL Spec Connector, 7 Pin, with Back Shell Plug 	62IN-16F-10-7P	15
56.	3 PIN MIL Spec female connector	Circular MIL Spec Connector 3P #16 SKT CONTACTS. With Back Shell plug	MS3106F10SL-3S	15
57.	Molex male 2 way 2.36mm	Headers & Wire Housings 2 CKT RCPT HOUSING	39-01-2020	2 packs (10 per pack)
58.	Female Crimp terminals	Headers & Wire Housings SOCKET 24-18AWG BULK	39-00-0039	3 packs (10 per pack)
59.	Molex removal tool	Extraction, Removal & Insertion Tools EXTRACTION TOOL MEGAFIT TRM 12-16AWG	63824-0810	1
60.	96 pin Harting removal tool	Harting Extraction/Removal tool	09990000101	4
61.	Molex, STANDARD .093" Female Connector Housing, 6.7mm Pitch, 2 Way, 1 Row	Pin & Socket Connectors 2 POSITION RECPT	19-09-1029	15
62.	Molex, STANDARD .093" Female Connector Housing, 5.03mm Pitch, 3 Way, 1 Row	Molex, STANDARD .093" Female Connector Housing, 3 Way, 1 Row	03-09-1031	4 packs (10 per pack)
63.	Female Crimp terminals	Molex, STANDARD .062" Female Crimp Terminal 18AWG 02-06-1101	02-06-1101	2 packs (100 per pack)
64.	D38999 26 PIN female connector	Circular MIL Spec Connector 26P SIZE 17 CABLE MOUNT SOCKET	D38999/26WE26SN	12

65.	Size 17 90° Back shell	Circular MIL Spec Strain Reliefs & Adapters BACKSHELL SR R/A OD CAD SZ 17 • Mating style: Non-Self Locking • Shell material: Aluminium alloy • Shell style: Right Angle	M85049/39-17W	12
66.	3 PIN Amphenol female connector	Amphenol Circular MIL Spec Connector, 3 pin, Female, with Back Shell Plug	62GB-16F12-03SN	12
67.	6 PIN Amphenol Box mount connector	6-way Female Cylindrical Receptacle with Bayonet Lock and Box Mount (MIL-C-24682)	PT02E-10-6S	25
68.	Male Connector Housing, 4.2mm Pitch, 2 Row	Molex, Mini-Fit Jr Male Connector Housing, 4.2mm Pitch, 6 Way, 2 Row 	39-01-2066	25
69.	Male Crimp Terminals	Molex, 30490 Male Crimp Terminal 304902002	304902002	2 packs (100 per pack)
70.	Female Connector Housing, 4.2mm Pitch, 2 Row	Headers & Wire Housings 6 CKT RCPT HOUSING, 4.2mm Pitch, 6 Way, 2 Row 	39-01-2065	25
71.	Female crimp Terminal	Headers & Wire Housings SOCKET 24-18AWG BULK	39-00-0039	2 packs (100 per pack)

RF CONNECTORS

72.	SMA Crimp Plug	SMA Plug Crimp LMR240	CNC7J01150A0611	30
73.	SMA Bulkhead	Adapter SMA bulkhead JACK-JACK	CNC7J01154A0041	30
74.	TNC Crimp Plug	TNC Crimp Plug for LMR240	CNC7J01010A0035	15

75.	TNC 90° Crimp Plug	TNC Angle Plug Crimp LMR240	CNC7J01010A0037	15
76.	TNC Bulkhead	Adapter TNC bulkhead JACK-JACK	CNC7J01014A2233	35
77.	BNC Connector	Amphenol RF 50Ω Straight Cable Mount, BNC Connector, Plug, BELDEN 9258, LMR-240 	CNC7J01000A0049	15
78.	BNC bulkhead	Straight 75Ω RF Adapter BNC Socket to BNC Socket 4GHz 	J01005A0008	15
79.	TRD150G Train Antenna	Rugged, low-profile antenna and designed for use on locomotives, bus, or trucks. It covers VHF, GSM Cellular / WiFi, and GPS	A10AA1555A	11
80.	TRD450G Train Antenna	Rugged, low-profile antenna and designed for use on locomotives, bus, or trucks Or Similar		22

PERSONAL COMPUTER

81.	Intel NUC 13 Pro 13th Gen Core i7 Mini PC Kit	13th Generation Core i7-1360P Turbo up to 5.00GHz Processor - Intel Iris Graphics - Wi-Fi 6 AX211 Wireless LAN - Bluetooth / Intel Gigabit LAN - Front: 2x USB-A, 1x Audio I/O - Rear: 2x USB-A, 2x USB Type-C, 2x HDMI, 1x RJ-45 Include and pre-install the following configuration to the NUC PC kit above: 8GB RAM 512GB SSD - Windows 11 Home	RNUC13ANKI70000	11
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82.	Monitor	22" inch monitor with the following: • HDMI port • Power slot and Ports that are facing downwards, and mounting point e.g. 		11
83.	Keyboard + Mouse	Wireless Keyboard + Mouse		11
84.	Microsoft Office	Microsoft Office Home & Student 2021		11
85.	HDMI cable	2.0M HDMI cable (Male to Male)		11