TECHNICAL SPECIFICATION – EMU SHORE SUPPLY CABLE			
File Reference	DOCS_CMR3-#319916-v1-Specification_-_EMU_Shore_Supply_Cable.DOCX		
Creation Date	2022-03-29	Last Edit Date	2022-03-30
Compiled	Snr Eng. Technician	Hulisani Murema	
Reviewed	System Engineer	Shaun Dirks	

1. Definition

1.1. Purpose

The purpose of this specification is to outline the requirements in the purchasing of a Shore Supply Cable/Adapter to charge the backup batteries from shore supply as well as power the auxiliary circuits for testing purposes on the EMU.

1.2. Problem Statement

This is not an off the shelf product and needs to be manufactured/assembled from different parts, some of which is not available locally.

1.3. Benefits

The immediate benefits of the purchase will yield the following results:

- The EMU does not need to be powered via overhead supply to keep the EMU batteries charged.
- The EMU does not need to be powered via overhead supply to keep the EMU in standby.
- Testing of auxiliary equipment can be done where no overhead supply is available (provided there is shore supply available).

1.4. Composition of Cable/Adapter

The cable/adapter comprises of the following:

- Industrial Plug
- 5 Core Cable
- Railway Connector

2. Original Equipment Manufacturers

This section is aimed at providing guidance on the OEM(s) of the required product.

Original Equivalent Manufacturer			
1. Is it a Specialised Item?	• Yes, although the industrial plug and cable is available over the counter. The rail connector is only available internationally.	2. Known Original Equipment Manufacturer(s)	• Industrial Connector – ONESTO • Rail Connector – Compagnie Deutsh GmbH • Cable – Alvern Cables
3. Item/Product Order Number/Name	• Industrial Plug - OS0351 • Rail Connector - CCA0629-0140-C0006 • Cable - Ho7RN-F	4. Is an equivalent product also preferred?	• Yes. • Alternative to be approved by end user.

3. Technical Requirements

The technical requirements for the product to be purchased are as follows:

Cable	
1. Insulation Type	• HO7RNF Heavy Duty Rubber
2. Insulation Colour	• Black
3. Outside diameter of insulation	• 23.74mm
4. Insulation Thickness	• 4.56mm
5. Inside diameter of insulation	• 17mm
6. Number of cores on the cable	• 5 (3P+N+E)
7. Inside Diameter of Wire	• 5.96mm
8. Outside Diameter	• 6.69mm
9. Thickness of wire insulation	• 0.73mm
10. Area of wire (inside)	• 27.898mm^2
11. Number of strands	• 43
12. Total cable length	• 14m

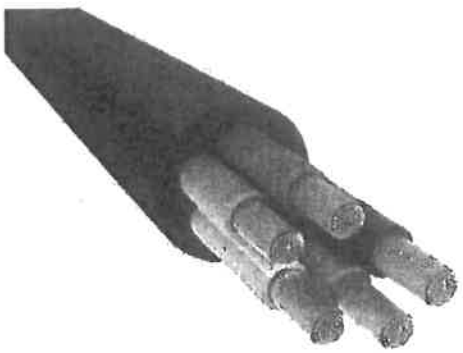


Figure 1: Cable

TECHNICAL SPECIFICATION – EMU SHORE SUPPLY CABLE			
File Reference	DOCS_CMR3-#319916-v1-Specification_-_EMU_Shore_Supply_Cable.DOCX		
Creation Date	2022-03-29	Last Edit Date	2022-03-30
Compiled	Snr Eng. Technician	Hulisani Murema	
Reviewed	System Engineer	Shaun Dirks	

Industrial Plug (male)	
1. Number of Poles	• 3P+N+E
2. IP Grade	• IP67
3. Rated Current	• 63A
4. Rated Operating Voltage	• 220-380V AC • 240-415V AC
5. Rated Insulation Voltage	• 690V AC
6. Rated Frequency	• 50/60Hz
7. Earth Position	• 6H
8. Standard	• IEC/EN 60309-1/2

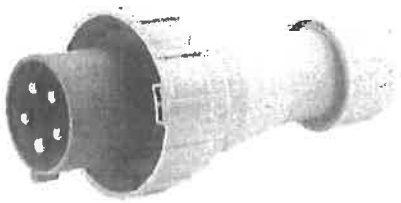


Figure 2: Industrial Plug

Railway Connector (female)	
1. Housing Material	• Aluminium
2. Contact Material	• Silver Plated Brass
3. Insulator	• Thermosetting
4. Protection Index	• IP53 IK7
5. Contact Size	• Ph/Ph: 7mm • Ph/T: 3mm
6. Contact Stem Size	• Ph/Ph: 7mm • Ph/T: 3.3mm
7. Termination	• Soldering
8. Contact Type	• Sleeve
9. Max O.D.	• 30mm
10. Max Cross-Section	• Ph/Ph: 16mm^2 • Ph/T: 6mm^2
11. Max Ø Cable over Insulation	• 11.5mm

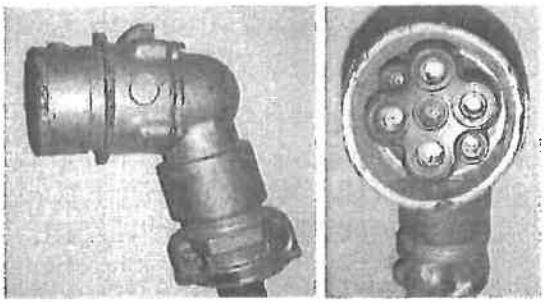


Figure 3: Rail Connector
(see Annexure I for detail)

Wiring Diagram			
Phase	Industrial Plug Pin Number	Cable Colour	Rail Connector Pin Number
L1	L1	Brown	1
L2	L2	Grey	2
L3	L3	Blue	3
N	N	Black	4
E	E	Green/Yellow	NC

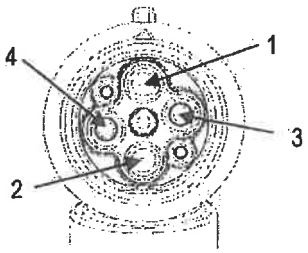


Figure 4: Connector viewed from front

4. Pictorials

An indication of the assembled cable is shown below.

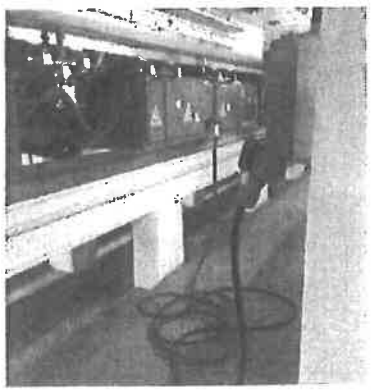
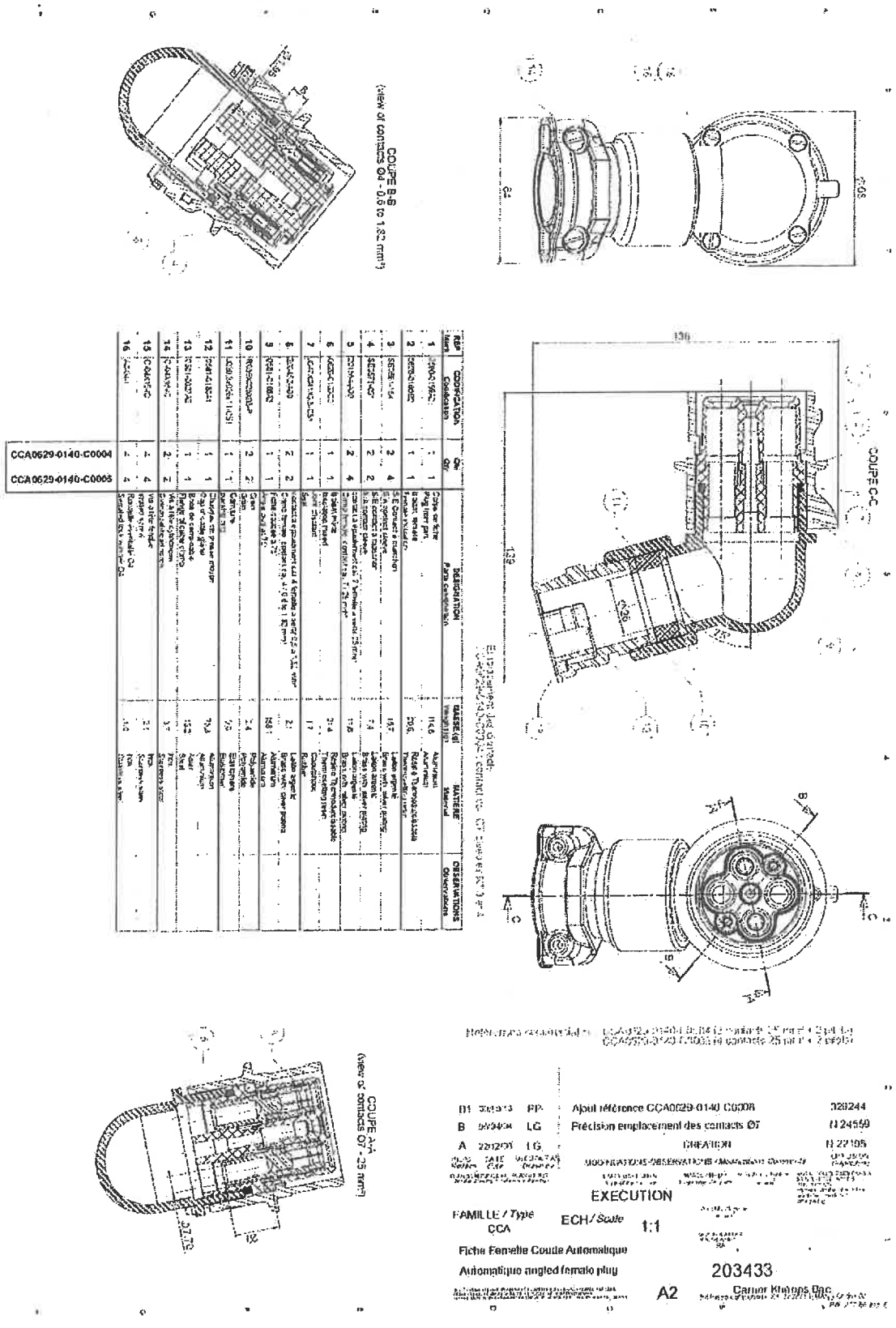


Figure 5: Assembled cable showing connection between industrial socket and EMU

Annexure I


CCA0629-0140-C0004
CCA0629-0140-C0008
COUPE B-B
(VIEW OF CONTACTS Ø4 - 0,5 to 1,82 mm²)
COUPE C-C
COUPE A-A
(VIEW OF CONTACTS Ø7 - 25 mm²)
EXECUTION
FAMILLE / Type
CCA
ECH / Scale
1:1
Fiche Femelle Coude Automatique
Automatique angled female plug
203433
A2
Ajout référence CCA0629-0140-C0008
Précision emplacement des contacts Ø7