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RD 222742 **eMLA**

Marine Loading Arms

INPUT OUTPUT INTERFACE SIGNALS

3	01/08/2022	Re-Issue	JRO	AVA	PBO
2	10/06/2022	Third Issue	AVA	AFI	PBO
1	23/05/2022	Second Issue	AVA	AFI	PBO
0	14/04/2022	First Issue	AVA	AFI	PBO
Rev.	Issue Date	Description	Prepared by	Checked by	Approved by

COMMON INPUT / OUTPUT

OPTION	Signal name	Mnemonic	Electrical Circuit Diagram Item	Address	T.EN TAG	Intrinsically Safe	Control units on CP	Control lights on CP	PLC station I/Os – Normal: Digital Inputs (+24 Vdc)	Digital Outputs (+24 Vdc / 0.5	Digital Outputs (+24 Vdc / 2 A)	Digital Outputs (Relays)	Analog Inputs	Analog Outputs	Routing: From	Routing: To	rev.
	400V LINE MONITORING	I_400V_LINE_MONITORING		E 0.0	???				1						EDC	**PLCC**	2
	SPARE	SPARE		E 0.1					1								
	SPARE	SPARE		E 0.2					1								
	SPARE	SPARE		E 0.3					1								
	SPARE	SPARE		E 0.4					1								
	SPARE	SPARE		E 0.5					1								
	SPARE	SPARE		E 0.6					1								
	SPARE	SPARE		E 0.7					1								
	SPARE	SPARE		E 1.0					1								
	SPARE	SPARE		E 1.1					1								
	SPARE	SPARE		E 1.2					1								
	SPARE	SPARE		E 1.3					1								
	SPARE	SPARE		E 1.4					1								
	SPARE	SPARE		E 1.5					1								
	SPARE	SPARE		E 1.6					1								
	SPARE	SPARE		E 1.7					1								
	ESD RESET	I_ESD_RESET_KSW		E 210.0	HS 110		1		1						LCP	**PLCC**	
	ESD1 ACTIVATION	I_ESD1_ACTIVATION_PB		E 210.1	HS 111		1		1						LCP	**PLCC**	
	ESD2 ACTIVATION	I_ESD2_ACTIVATION_PB		E 220.0	HS 112		1		1						LCP	**PLCC**	
	MAINTENANCE OVERRIDE	I_MAINT_OVERRIDE_KSW		E 220.1	HS 113A		1		1						LCP	**PLCC**	
	ESD1 FROM CUSTOMER	I_ESD1_CUS		E 230.0	XS 111				1						???	**PLCC**	
	ESD2 FROM CUSTOMER	I_ESD2_CUS		E 230.1	XS 112				1						???	**PLCC**	
	ESD TEST	I_ESD_TEST		E 240.0	HS 113B		1		1						LCP	**PLCC**	
	SPARE	SPARE		E 240.1					1								
	ARM1 ERS AUTORIZED	I_ARM1_ERS_AUTORIZED_KSW		E 310.0	HS ???		1		1						LCP	**PLCC**	
	ARM2 ERS AUTORIZED	I_ARM2_ERS_AUTORIZED_KSW		E 310.1	HS ???		1		1						LCP	**PLCC**	
	ARM3 ERS AUTORIZED	I_ARM3_ERS_AUTORIZED_KSW		E 320.0	HS ???		1		1						LCP	**PLCC**	
	ARM4 ERS AUTORIZED	I_ARM4_ERS_AUTORIZED_KSW		E 320.1	HS ???		1		1						LCP	**PLCC**	
	SPARE	SPARE		E 330.0					1								
	SPARE	SPARE		E 330.1					1								
	SPARE	SPARE		E 340.0					1								
	SPARE	SPARE		E 340.1					1								
	AUDIO ALARM	O_AUDIO_ALARM		A 0.0	XK 103							1			**PLCC**	LCP	
	VISUAL ALARM	O_VISUAL_ALARM_IR		A 0.1	XL 115							1			**PLCC**	LCP	
	400V_LINE_MONITORING	O_400V_LINE_MONITORING_LIGHT		A 0.2	???			1				1			**PLCC**	EDC	2
	SPARE	SPARE		A 0.3								1					
	SPARE	SPARE		A 0.4								1					
	SPARE	SPARE		A 0.5								1					
	SPARE	SPARE		A 0.6								1					
	SPARE	SPARE		A 0.7								1					
				Total		0	9	1	32	0	0	8	0	0			
											8						

Legend : LCP -> Local Control Panel
PLCC -> PLC Cabinet
EDC -> Electrical distribution cabinet

SAFETY

ARM1 INPUT / OUTPUT

OPTION	Signal name	Mnemonic	Electrical Circuit Diagram Item	Address	T.EN TAG	PLC station I/Os – Normal: Intrinsically Safe	Control Units on GP	Control Lights on GP	Digital Inputs (+24 Vdc)	Digital Outputs (+24 Vdc / 0,5 A)	Digital Outputs (+24 Vdc / 2 A)	Digital Outputs (Relays)	Analog Inputs	Analog Outputs	Routing – From	Routing – To	Rev.
	ARM1 STORM LOCKED	I_ARM1_STORM LOCKED_SW		E 2.0	ZSC 45-1	1			1						ARM1	PLCC	
	ARM1 PERC COLLAR	I_ARM1_PERC_COLLAR_SW		E 2.1	ZSC 46-1	1			1						ARM1	PLCC	
	ARM1 ERS VALVES CLOSED	I_ARM1_ERS_VALVES_CL_SW		E 2.2	ZSC 7A-1	1			1						ARM1	PLCC	
	ARM1 ERS VALVES OPENED	I_ARM1_ERS_VALVES_OP_SW		E 2.3	ZSO 7B-1	1			1						ARM1	PLCC	
X	ARM1 COUPLER CLOSED	I_ARM1_COUPLER_CLOSED_SW		E 2.4	ZSC 8-1	1			1						ARM1	PLCC	3
	ARM1 PERC AXIS	I_ARM1_PERC_AXIS_SW		E 2.5	ZSO 47-1	1			1						ARM1	PLCC	
	ARM1_QCDC_SERRAGE	I_ARM1_QCDC_SERRAGE_SW		E 2.6	???	1			1						ARM1	PLCC	
	ARM1_QCDC_DESSERAGE	I_ARM1_QCDC_DESSERAGE_SW		E 2.7	???	1			1						ARM1	PLCC	
	SPARE	SPARE		E 3.0					1								1
X	ARM1_AUTOMATIC_INBOARD_UNLOCKED	I_ARM1_AUTOMATIC_INBOARD_UNLOCKED_SW		E 3.1	???	1			1						ARM1	PLCC	3
X	ARM1_AUTOMATIC_OUTBOARD_LOCKED	I_ARM1_AUTOMATIC_OUTBOARD_LOCKED_SW		E 3.2	???	1			1						ARM1	PLCC	3
X	ARM1_AUTOMATIC_OUTBOARD_UNLOCKED	I_ARM1_AUTOMATIC_OUTBOARD_UNLOCKED_SW		E 3.3	???	1			1						ARM1	PLCC	3
X	ARM1_FLANGE_DETECTION_1	I_ARM1_FLANGE_DETECTION_1_SW		E 3.4	???	1			1						ARM1	PLCC	3
X	ARM1_FLANGE_DETECTION_2	I_ARM1_FLANGE_DETECTION_2_SW		E 3.5	???	1			1						ARM1	PLCC	3
X	ARM1_FLANGE_DETECTION_3	I_ARM1_FLANGE_DETECTION_3_SW		E 3.6	???	1			1						ARM1	PLCC	3
X	ARM1_BLIND_FLANGE_CLOSED	I_ARM1_BLIND_FLANGE_CLOSED_SW		E 3.7	???	1			1						ARM1	PLCC	3
	SPARE	SPARE		E 4.0					1								
	SPARE	SPARE		E 4.1					1								
	SPARE	SPARE		E 4.2					1								
	SPARE	SPARE		E 4.3					1								
	SPARE	SPARE		E 4.4					1								
	SPARE	SPARE		E 4.5					1								
	SPARE	SPARE		E 4.6					1								
	SPARE	SPARE		E 4.7					1								
	ARM1 1ST ALARM APEX ANGLE	I_ARM1_AL1_APEX_SW		E 410.0	ZSH 60A-1	1			1						ARM1	PLCC	
	ARM1 2ND ALARM APEX ANGLE 1	I_ARM1_AL21_APEX_SW		E 410.1	ZSHH 60B-1	1			1						ARM1	PLCC	
	ARM1 1ST ALARM SLEWING ANGLE	I_ARM1_AL1_SLEW_SW		E 420.0	ZSH 60D-1	1			1						ARM1	PLCC	
	ARM1 2ND ALARM SLEWING ANGLE 1	I_ARM1_AL21_SLEW_SW		E 420.1	ZSHH 60E-1	1			1						ARM1	PLCC	
	ARM1 2ND ALARM APEX ANGLE 2	I_ARM1_AL22_APEX_SW		E 430.0	ZSHH 60C-1	1			1						ARM1	PLCC	
	ARM1 2ND ALARM SLEWING ANGLE 2	I_ARM1_AL22_SLEW_SW		E 430.1	ZSHH 60F-1	1			1						ARM1	PLCC	
	ARM1 PRE-ALARM APEX ANGLE	I_ARM1_PRE_AL_APEX_SW		E 440.0	ZSH 60G-1	1			1						ARM1	PLCC	
	ARM1 PRE-ALARM SLEWING ANGLE	I_ARM1_PRE_AL_SLEW_SW		E 440.1	ZSH 60H-1	1			1						ARM1	PLCC	
	ARM1_RESISTANCE_FREINAGE	I_ARM1_RESISTANCE_FREINAGE_PTC		E 510.0	???				1						LCP	PLCC	1
	ARM1_PTC_INBOARD	I_ARM1_PTC_INBOARD		E 510.1	???				1						ARM1	PLCC	1
	ARM1_PTC_OUTBOARD	I_ARM1_PTC_OUTBOARD		E 520.0	???				1						ARM1	PLCC	1
	ARM1_PTC_SLEWING	I_ARM1_PTC_SLEWING		E 520.1	???				1						ARM1	PLCC	1
	ARM1_PTC_ST80	I_ARM1_PTC_ST80		E 530.0	???				1						ARM1	PLCC	1
	ARM1_PTC_ERS	I_ARM1_PTC_ERS		E 530.1	???				1						ARM1	PLCC	1
	ARM1_PTC_QCDC1	I_ARM1_PTC_QCDC1		E 540.0	???				1						ARM1	PLCC	1
	ARM1_PTC_QCDC2	I_ARM1_PTC_QCDC2		E 540.1	???				1						ARM1	PLCC	1
	ARM1_PTC_QCDC3	I_ARM1_PTC_QCDC3		E 610.0	???				1						ARM1	PLCC	1
	ARM1_PTC_QCDC4	I_ARM1_PTC_QCDC4		E 610.1	???				1						ARM1	PLCC	1
	SPARE	SPARE		E 620.0					1								
	SPARE	SPARE		E 620.1					1								
	SPARE	SPARE		E 630.0					1								
	SPARE	SPARE		E 630.1					1								
	SPARE	SPARE		E 640.0					1								
	SPARE	SPARE		E 640.1					1								
	CPMS INBOARD ARM SENSOR	AI_CPMS_INBOARD		PEW	ZT 80A-1	1							1		ARM1	PLCC	
	CPMS OUTBOARD ARM SENSOR	AI_CPMS_OUTBOARD		PEW	ZT 80B-1	1							1		ARM1	PLCC	
	CPMS SLEWING SENSOR	AI_CPMS_SLEWING		PEW	ZT 80C-1	1							1		ARM1	PLCC	
X	MOTOR ST80 SLEWING SENSOR	AI_MOTOR_ST80		PEW	ZT 80D-1	1							1		ARM1	PLCC	3
	MOTOR INBOARD ARM SENSOR	AI_MOTOR_INBOARD		PEW	???								1		ARM1	PLCC	
	MOTOR OUTBOARD ARM SENSOR	AI_MOTOR_OUTBOARD		PEW	???								1		ARM1	PLCC	
	MOTOR SLEWING SENSOR	AI_MOTOR_SLEWING		PEW	???								1		ARM1	PLCC	
X	ARM ULTRASONIC SENSOR	AI_ARM1_ULTRASONIC_SENSOR_XT		PEW	???	1							1		ARM1	PLCC	3
X	ARM MONITORING RESISTANCE FREINAGE	AI_ARM1_RESISTANCE_FREINAGE_PT100		PEW	???								1		LCP	PLCC	
X	PT100_INBOARD	AI_PT100_INBOARD		PEW	???								1		ARM1	PLCC	
X	PT100_INBOARD	AI_PT100_INBOARD		PEW	???								1		ARM1	PLCC	
X	PT100_INBOARD	AI_PT100_INBOARD		PEW	???								1		ARM1	PLCC	
X	PT100_OUTBOARD	AI_PT100_OUTBOARD		PEW	???								1		ARM1	PLCC	
X	PT100_OUTBOARD	AI_PT100_OUTBOARD		PEW	???								1		ARM1	PLCC	
X	PT100_OUTBOARD	AI_PT100_OUTBOARD		PEW	???								1		ARM1	PLCC	
X	PT100_SLEWING	AI_PT100_SLEWING		PEW	???								1		ARM1	PLCC	
X	PT100_SLEWING	AI_PT100_SLEWING		PEW	???								1		ARM1	PLCC	
X	PT100_SLEWING	AI_PT100_SLEWING		PEW	???								1		ARM1	PLCC	
X	ARM1_FLOODLIGHT_IN	AI_ARM1_FLOODLIGHT_IN		PEW	???								1		LCP (sbRIO)	PLCC	3
X	ARM1_FLOODLIGHT2_IN	AI_ARM1_FLOODLIGHT2_IN		PEW	???								1		LCP (sbRIO)	PLCC	3
	SPARE	SPARE		PEW									1				1
	SPARE	SPARE		PEW									1				
	SPARE	SPARE		PEW									1				
	SPARE	SPARE		PEW									1				
	ARM1 INBOARD BACK	O_ARM1_IB_BACK		A 1.0	???						1				PLCC	VFD	
	ARM1 INBOARD FORWARD	O_ARM1_IB_FORW		A 1.1	???						1				PLCC	VFD	
	ARM1 OUTBOARD OUT	O_ARM1_OB_OUT		A 1.2	???						1				PLCC	VFD	
	ARM1 OUTBOARD IN	O_ARM1_OB_IN		A 1.3	???						1				PLCC	VFD	
	ARM1 SLEWING LEFT	O_ARM1_SLEW_LEFT		A 1.4	???						1				PLCC	VFD	
	ARM1 SLEWING RIGHT	O_ARM1_SLEW_RIGHT		A 1.5	???						1				PLCC	VFD	
	ARM1 OPEN ERS VALVES	O_ARM1_OPEN_ERS VALVES		A 1.6	???						1				PLCC	VFD	
X	ARM1 AUTO CONNECTION IN PROGRESS	O_ARM1_AUTO_CONNECTION		A 1.7	???						1				PLCC	ARM1	3
	ARM1 CLOSE QCDC	O_ARM1_CL_COUPLER		A 2.0	???						1				PLCC	VFD	
	ARM1 OPEN QCDC	O_ARM1_OP_COUPLER		A 2.1	???						1				PLCC	VFD	
X	ARM1_ST80_SLEWING_LEFT	O_ARM1_ST80_SLEW_LEFT		A 2.2	???						1				PLCC	VFD	
X	ARM1_ST80_SLEWING_RIGHT	O_ARM1_ST80_SLEW_RIGHT		A 2.3	???						1				PLCC	VFD	
X	ARM1_BLIND_FLANGE_OPEN	O_ARM1_BLIND_FLANGE_OPEN		A 2.4	???						1				PLCC	ARM1	
X	ARM1_BLIND_FLANGE_CLOSE	O_ARM1_BLIND_FLANGE_CLOSE		A 2.5	???						1				PLCC	ARM1	
	SPARE	SPARE		A 2.6							1						2
	SPARE	SPARE		A 2.7							1						2
X	ARM1_AUTOMATIC_LOCKED	O_ARM1_AUTOMATIC_INBOARD_LOCKED		A 3.0	???						1				PLCC	ARM1	3
X	ARM1_AUTOMATIC_UNLOCKED	O_ARM1_AUTOMATIC_INBOARD_UNLOCKED		A 3.1	???						1				PLCC	ARM1	3
	SPARE	SPARE		A 3.2							1						
	SPARE	SPARE		A 3.3							1						
	SPARE	SPARE		A 3.4							1						
	SPARE	SPARE		A 3.5							1						
	SPARE	SPARE		A 3.6							1						
	SPARE	SPARE		A 3.7							1						
	ARM1_ERS_ENABLE	O_ARM1_ERS_ENABLE		A 210.0	???							1			PLCC	VFD	
	ARM1 OPEN PERC	O_ARM1_OPEN_PERC		A 210.1	???							1			PLCC	VFD	
	ARM1 CLOSE ERS VALVES	O_ARM1_CLOSE_ERS VALVES		A 220.0	???							1			PLCC	VFD	
	ARM1 INBOARD ENABLE	O_ARM1_IB_ENABLE		A 220.1	???							1			PLCC	VFD	
	ARM1 OUTBOARD_ENABLE	O_ARM1_OB_ENABLE		A 230.0	???							1			PLCC	VFD	
	ARM1 SLEWING_ENABLE	O_ARM1_SLEW_ENABLE		A 230.1	???							1			PLCC	VFD	
	ARM1 QCDC_ENABLE	O_ARM1_QCDC_ENABLE		A 240.0	???							1			PLCC	VFD	
X	ARM1_ST80_SLEWING_ENABLE	O_ARM1_ST80_SLEW_ENABLE		A 240.1	???							1			PLCC	VFD	3
	ARM1 INBOARD (Proportionnel)	AO_ARM1_INBOARD_XT		PAW										1	PLCC	VFD	
	ARM1 OUTBOARD (Proportionnel)	AO_ARM1_OUTBOARD_XT		PAW										1	PLCC	VFD	
	ARM1 SLEWING (Proportionnel)	AO_ARM1_SLEWING_XT		PAW										1	PLCC	VFD	
X	ARM1_ST80_SLEWING (Proportionnel)	AO_ARM1_ST80_XT		PAW										1	PLCC	VFD	3
	ARM1_QCDC (Proportionnel)	AO_ARM1_QCDC_XT		PAW										1	PLCC	VFD	2
X	ARM1_FLOODLIGHT_OUT	AO_ARM1_FLOODLIGHT_OUT		PAW										1	PLCC	ARM1	3
X	ARM1_FLOODLIGHT2_OUT	AO_ARM1_FLOODLIGHT2_OUT		PAW										1	PLCC	ARM1	3
	SPARE	SPARE		PAW										1			
				Total		28	0	0	48	0	24	8	24	8			
											32						

Legend : LCP -> Local Control Panel
VFD-> Variable Frequency Drive
PLCC -> PLC Cabinet

SAFETY