



Refered schedule drawing for certificates Pressat 17ATEX10725, Pressat 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, N° RU DE A924.B 04261, FM18US0055X, and FM16AO409X are:  
For MC-3.5 EX and MC-3.6 EX, 920207T1B 1 For MC-320 EX and MC-3300 EX, 9202072B  
**No factors defined within the referred certificate or drawing shall be modified.**

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A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021	FMC SO60-2104903		
B	REMOVED IRQ -S0	06.01.2022	EF	name	EF			
				Proved				
Rev.	WH	date	BN	GN		Origin	Repl. f.	Repl. by



- 1. Coversheet
- 1. Coversheet

Project no.		2104903T1B-1-2	
Scale	Draw.no.		Sheet 1
	2104903T1B-1-2		Next 2

project: 2104903T1B-1-2

Order: PO18-2100468

## Contents:

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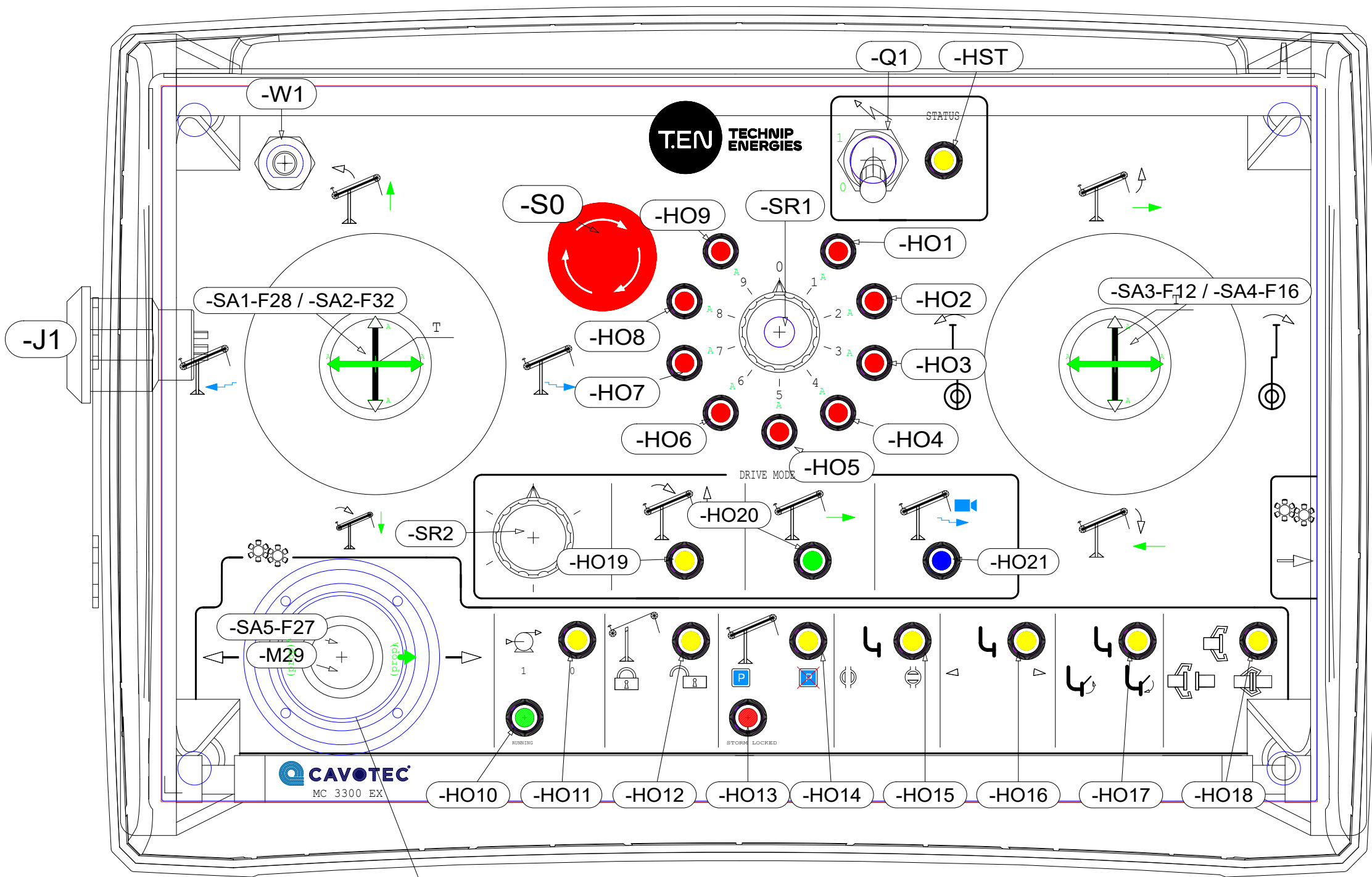
FMC Type: Easy Drive

Refered schedule drawing for certificates Presafe 17ATEX10725, Presafe 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, N°RU C-DE AB24, E 04261, FM16US0055X and FM16CA0049X are:  
For MC-3-6 EX and MC-3-6 EX: 90280771B | For MC-3200 EX and MC-3300 EX: 90280772B  
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TERMINAL UNIT

Cavotec Micro-control AS	
N-7517 Hell, Norway	
Remote control MC-3300 EX	
Ex ia IIB T4 Gb -20°C ≤Ta≤ +60°C (cable only: -30°C)	
Presafe 17ATEX10727 IECEx PRE 17.0038	Serial no : 1XXXX Prod. date : 201X.XX
 II 2 G	 0470
	-Use only replaceable battery pack MC-EX-BATTERY3 -Battery and cable shall not be used simultaneously

ROTATE -M29 180 DEGREE SO  
DIRECTION 3-4 IS ACTIVE.  
JOYSTICK SA5-F27 MUST BE ROTATED  
180 DEGREE TO AVOID COLLISION  
WITH KB2 CARD

-N1

Frequency: 419.050 MHz

BOTTOM OF TERMINAL

Low battery signal = F33  
Inactivity timeout: 10min.

TESTED ☐

A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021
B	REMOVED IRQ-S0	06.01.2022	EF	name	EF
				Proved	
Rev.	WH	date	BN	GN	

FMC	SO60-2104903	PO18-2100468
Origin	Repl. f.	Repl. by



4. Terminal Unit  
Terminal Unit

Project no.		2104903T1B-1-2		=M33-2104903-01EX-1-2	
Scale		1:1		Draw.no.	
				2104903T1B-1-2	
				Sheet	2
				Next	3

1 2 3 4 5 6 7 8



Refered schedule drawing for certificates Presale 17ATEX10725, Presale 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, N° RU C-DE AB24, E 04261, FM16US055X and FM16CA049X are:  
For MC-3-5 EX and MC-3-6 EX: 902807T1B | For MC-320 EX and MC-3300 EX: 902807T2B  
No factors defined within the referred certificate or drawing shall be modified.

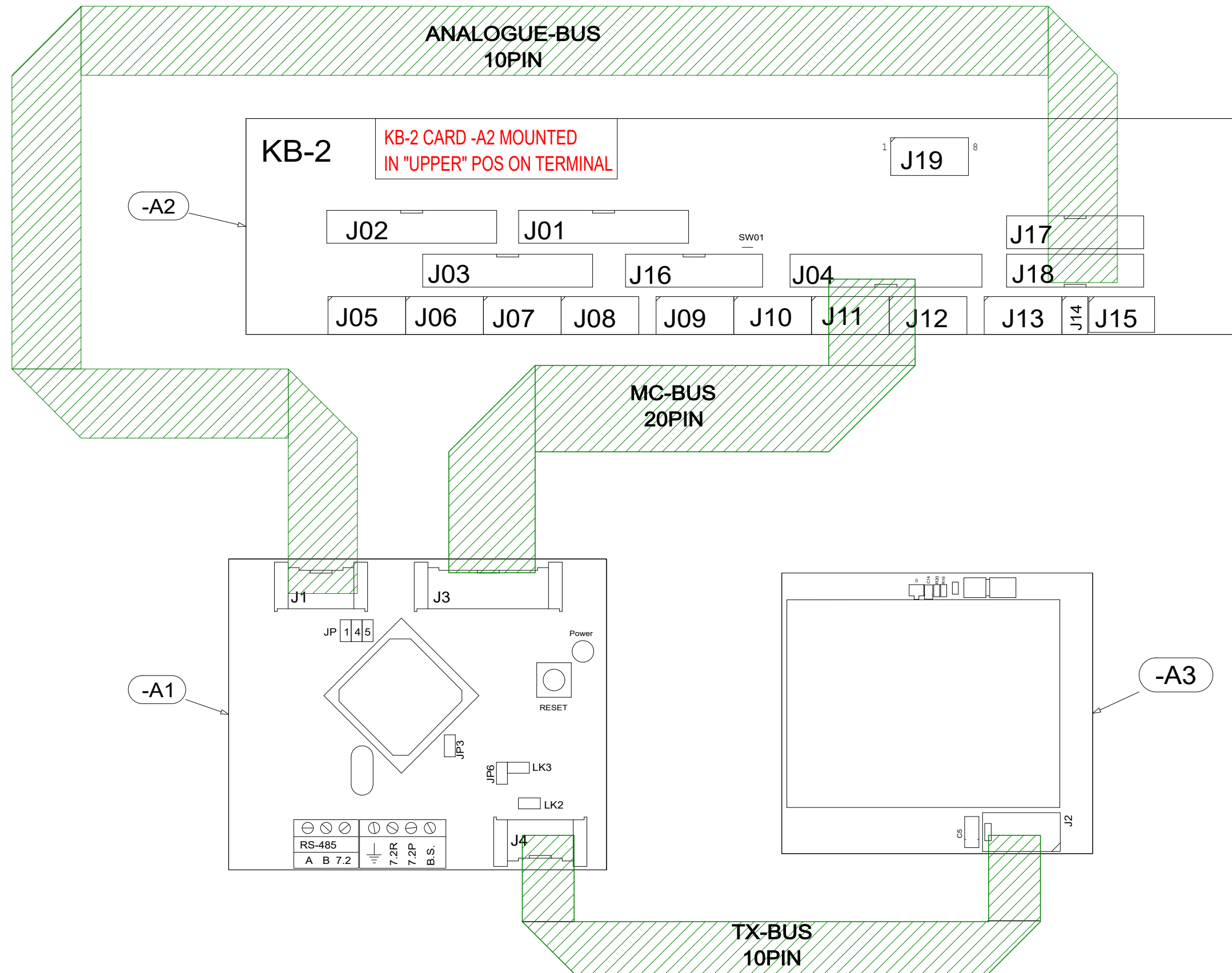
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A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021	FMC SO60-2104903 PO18-2100468	
B	REMOVED IRQ-S0	06.01.2022	EF	name	EF		
				Proved			
Rev.	WH	date	BN	GN		Origin	Repl. f.      Repl. by



4. Terminal Unit  
Terminal Unit

Project no.		2104903T1B-1-2		=M33-2104903-01EX-1-2	
Scale		1:1		Draw.no.	
				2104903T1B-1-2	
				Sheet	3
				Next	4




A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021	FMC SO60-2104903 PO18-2100468			 <b>CAVOTEC</b> <i>We connect the future.</i>	4.Terminal Unit Terminal Unit	Project no. <b>2104903T1B-1-2</b>		=M33-2104903-01EX-1-2	
B	REMOVED IRQ -S0	06.01.2022	EF	name	EF								+TX	
				Proved										
Rev.	WH	date	BN	GN		Origin	Repl. f.	Repl. by			Scale 1:1	Draw.no. <b>2104903T1B-1-2</b>	Sheet 4 Next 5	



Refered schedule drawing for certificates Presale 17ATEX10725, Presale 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, N° RU C-DE AB24, E 04261, FM16US0055X and FM16CA0049X are:  
For MC-3-5 EX and MC-3-6 EX: 90280771B | For MC-320 EX and MC-330 EX: 90280772B  
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B	REMOVED IRQ-S0	06.01.2022	EF	name	EF			
				Proved				
Rev.	WH	date	BN	GN		Origin	Repl. f.	Repl. by

 <div>CAVOTEC® We connect the future.</div>	4.Terminal Unit Terminal Unit	Project no. 2104903T1B-1-2		=M33-2104903-01EX-1-2	
				+TX	
		Scale 1:1	Draw.no. 2104903T1B-1-2		Sheet 5
				Next 6	



Refered schedule drawing for certificates Presale 17ATEX10725, Presale 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, N°RU C-DE AB24, E 04261, FM16US055X and FM16CA049X are:  
For MC-3-5 EX and MC-3-6 EX: 902807T1B | For MC-3200 EX and MC-3300 EX: 902807T2B  
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B	REMOVED IRQ -S0	06.01.2022	EF	name	EF			
				Proved				
Rev.	WH	date	BN	GN		Origin	Repl. f.	Repl. by



4.Terminal Unit  
Terminal Unit

Project no.		2104903T1B-1-2		=M33-2104903-01EX-1-2	
Scale		1:1		Draw.no.	
				2104903T1B-1-2	
				Sheet	6
				Next	7



Referred schedule drawing for certificates Presale 17ATEX10725, Presale 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, N°RU C-DE AB24 E 04261, FM16US0065X and FM16CA0049X are:  
For MC-3-6 EX and MC-3-6 EX: 90280771B | For MC-320 EX and MC-3300 EX: 90280772B  
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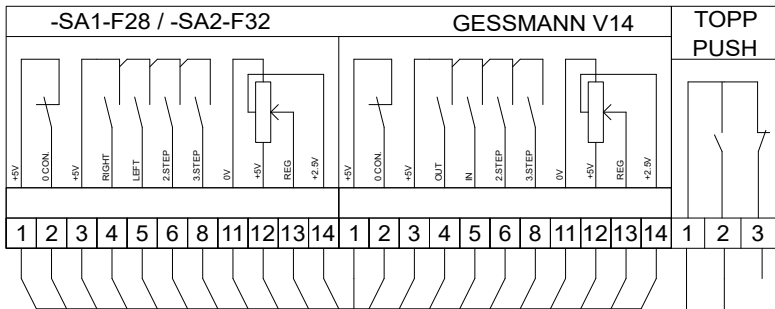
A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021	FMC SO60-2104903 PO18-2100468		
B	REMOVED IRQ-S0	06.01.2022	EF	name	EF			
				Proved				
Rev.	WH	date	BN	GN		Origin	Repl. f.	Repl. by



4.Terminal Unit  
Terminal Unit

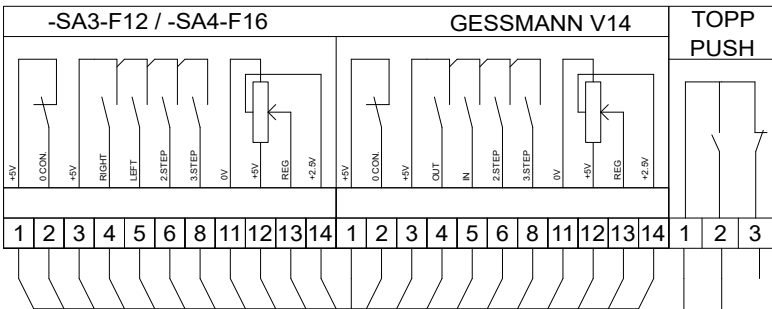
Project no.	2104903T1B-1-2	=M33-2104903-01EX-1-2	
Scale	1:1	Draw.no.	2104903T1B-1-2
		Sheet	7
		Next	8

LEFT JOYSTICK ANALOG W / CROSSGUIDE



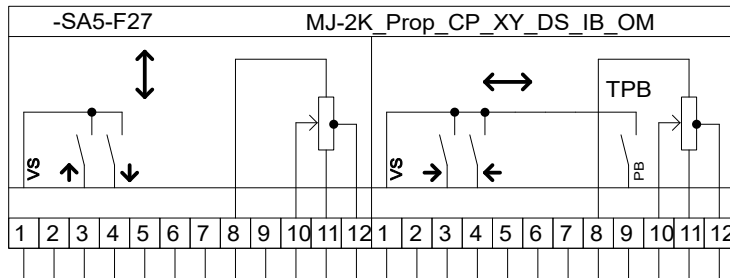
-M27  
J01

RIGHT JOYSTICK ANALOG W / CROSSGUIDE



-M28  
J02

JOYSTICK SA5-F27 MUST BE ROTATED 180 DEGREE TO  
AVVOID COLLISION WITH KB2 CARD

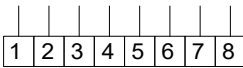


0 VOLT  $\Sigma_{-3}$  /6.E8

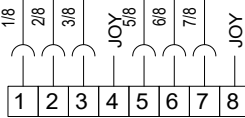
-R1

Resistance 1 KOhm: M5-2934-5002  
Use heat-shrinkable tubing over the resistance

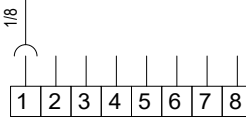
LOW BAT = F33



-A2 J19



-A2 J08



-A2 J13





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For MC-3-6 EX and MC-3-6 EX: 90280771B | For MC-3200 EX and MC-3300 EX: 90280772B  
No factors defined within the referred certificate or drawing shall be modified.

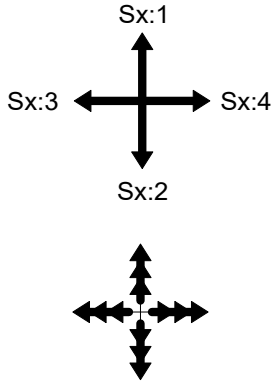
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## LAYOUT DESCRIPTION



### PROPORTIONAL JOYSTICK

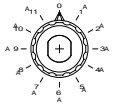
Sx = JOYSTICK REFERENCE NUMBER  
:1 = JOYSTICK MOVED FORWARD  
:2 = JOYSTICK MOVED BACKWARDS  
:3 = JOYSTICK MOVED LEFT  
:4 = JOYSTICK MOVED RIGHT

### DIGITAL JOYSTICK

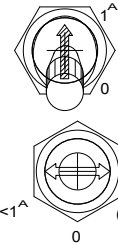
Sx:y:1 = FIRST STEP IN y DIRECTION  
Sx:y:2 = SECOND STEP IN y DIRECTION  
Sx:y:3 = THIRD STEP IN y DIRECTION  
EXAMPLE: S1 JOYSTICK MOVED  
TWO STEPS TO THE RIGHT S1:4:2

### SWITCHES

0 = NO SIGNAL IN THIS POSITION (SWITCH OFF)  
1 = SIGNAL IN THIS POSITION (SWITCH ON)  
(1) = SWITCH IS SPRING RETURN FROM THIS POSITION  
(1)T = SWITCH IS SPRING RETURN AND SIGNAL IS TOGGLED  
1 = SWITCH IS MAINTAINED IN THIS POSITION  
<1 OR 1L = SWITCH IS MEC.LOCKED IN THIS POSITION



ROTARY SWITCHES  
Sx:y = SWITCH Sx, STEP y IS COUNTED  
CW FROM TOP POSITION



EXAMPLE: 2 POSITION SWITCH MOUNTED IN  
1/2 DIRECTION, MAINTAINED IN BOTH POS.  
SWITCH GIVES SIGNAL WHEN MOVED FORWARD

EXAMPLE: 3 POSITION SWITCH MOUNTED IN  
3/4 DIRECTION MEC. LOCKED IN LEFT POSITION,  
(1) SPRING RETURN IN RIGHT DIRECTION

Part name function relation:  
(Special: See extra marking on drawings)

**General:**  
Channels separated with a / are at one switch in the same direction,  
channels separated with a - are at one switch but in another direction.  
F=Digital channel  
A=Analogue channel, (prop+)=128....255 / (prop-)=128....0  
O=Digital output channel  
MIN=Digital input MIN programming (SMIN)  
MAX=Digital input MAX programming (SMAX)  
MICRO=Digital input MICRO speed (SMICRO)  
Switch change frequency: SCF  
Status LED: HST

LED: H0#, e.g. H04=O4  
Switch: SF#, F#=Digital channel, e.g. SF10=F10, or SF#/F# if more channels are related, e.g. SF1/F8=F1 and F8  
Switch with LED: SF#/O#, F#=Digital channel, O#=LED channel, e.g. SF10/O20=F10 for the switch, O20 for the LED,  
or SF#/F#/O#/O# if more channels are related, e.g. SF1/F8/O2/O9=F1 and F8, O2 and O9  
Rotary switch: SR#, no relation to function, function numbers are written in the layout or in function table  
Toggle switch: SF#, F#=Digital channel direction 1 or 3, e.g. SF6=F6 direction 1 or 3  
Toggle switch: S-F#, F#=Digital channel direction 2 or 4, e.g. S-F6=F6 direction 2 or 4  
Toggle switch: SF#-F#, 1st F#=Digital channel direction 1, 2nd F#=Digital channel direction 2,  
e.g. SF7-F8=F7 direction 1, F8 direction 2  
Toggle switch: SF#-F#, 1st F#=Digital channel direction 3, 2nd F#=Digital channel direction 4,  
e.g. SF3-F4=F3 direction 3, F4 direction 4

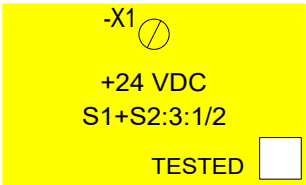
Digital joystick: MS#, no relation to function, function numbers are written in the layout,  
e.g. F3/F2/F1 / F4/F2/F3 = F1=left direction, F2=2nd step, F3=3rd step / F4=right direction, F2=2nd step, F3=rd step  
Potentiometer: SA#, A#=Analogue channel  
Cross joystick proportional: SA#/F#-A#/F#,  
1st A#=Analogue channel direction 1/2, 1st F#=Digital channel direction 1/2,  
2nd A#=Analogue channel direction 3/4, 2nd F#=Digital channel direction 3/4,  
e.g. SA2/F12-A4/F14=A2/F12 direction 1/2, A4/F14 direct  
Linear joystick proportional: SA#/F#, A#=Analogue channel, F#=Digital channel, e.g. SA1/F11=A1/F11

## GENERAL LOGIC AND EXAMPLES

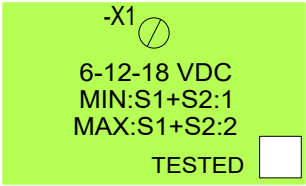
A+B = AND, BOTH ARGUMENT A AND B MUST BE TRUE  
A+ NOT B = NOT, ARGUMENT A MUST BE TRUE AND ARGUMENT B MUST BE FALSE  
A/B = OR, EITHER A OR B MUST BE TRUE  
+24 VDC = SIGNAL OUT WHEN ARGUMENT TRUE WILL BE 24 VDC  
6-12-18 VDC = PROPORTIONAL SIGNAL OUT WILL BE 6-12-18 VDC  
MIN&MAX ARGUMENTS SHOWN BELOW  
195-705mA = PROPORTIONAL SIGNAL OUT WILL FROM 195 TO 705 mA  
MIN&MAX ARGUMENTS SHOWN BELOW  
MIN = PROPTIONAL SIGNAL WILL BE MINIMUM VALUE IN THIS DIRECTION  
MAX = PROPTIONAL SIGNAL WILL BE MAXIMUM VALUE IN THIS DIRECTION  
\* = MORE COMPLEX LOGIC DESCRIBED OTHER PAGE

### E-STOP

UNLESS OTHER IS SPECIFIED EMERGENCY RELAYS ARE  
ALWAYS CLOSED DURING NORMAL OPERATION.  
ANY ERROR SUCH AS LOSS OF RADIO LINK, POWER OFF,  
HW OR SW ERROR WILL CAUSE RELAY TO OPEN  
AND ALL OTHER FUNCTIONS WILL BE DISABLED,  
TO RESUME NORMAL OPERATION  
PULL OUT E-STOP, TURN TERMINAL OFF/ON AND PUSH STARTBUTTON



TERMINAL WILL GIVE +24 VDC OUT WHEN  
SWITCH S1 IS ON (PUSHED FORWARD) AND  
S2 IS MOVED LEFT, IN FIRST OR SECOND STEP.



TERMINAL WILL GIVE REGULATED SIGNAL 6-18 VDC  
12 VDC IS CENTER. MAX OUT WILL BE WHEN  
YOU HAVE TURNED S1 ON, AND MOVED JOYSTICK  
ALL THE WAY IN 2 DIRECTION ( BACKWARDS)

A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021	FMC SO60-2104903 PO18-2100468			 5. Logic Logic		Project no. 2104903T1B-1-2			
B	REMOVED IRQ -S0	06.01.2022	EF	name	EF						Scale 1:1		Draw.no. 2104903T1B-1-2	
Rev.	change	date	name	Standard									Sheet 8	Next 9





Referred schedule drawing for certificates Presale 17ATEX10725, Presale 17ATEX10727, IECEx PRE 17.0037, IECEx PRE 17.0038, № RU C-DE AB24, E 04261, FM16US055X and FM16CA049X are:  
For MC-3-6 EX and MC-3-6 EX-902807TB | For MC-320 EX and MC-3300 EX-9028072B  
No factors defined within the referred certificate or drawing shall be modified.

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bill of material

\* Certificates are located on USB flash drive

Higher Level Assignment:				Location designation:			
Pos.	Location	Device Designation	Article Number	Description	No.	Ex Code	Ex Certificate
1	+TX	-A1	M9-1020-4300	MC-EX-PM	1		
2	+TX	-A2	M9-1031-3002	MC-KB-2 EX	1		
3	+TX	-A3	M9-1012-7035	MC-EX-CD-PLL-419 [418.725-419.425 MHz]	1	See Certificate for Device -TX1*	See Certificate for Device -TX1*
4	+TX	-HO1, -HO2, -HO3, -HO4, -HO5, -HO6, -HO7, -HO8, -HO9, -HO13	M5-2935-6001	LED Chassis Red APEM	10		
5	+TX	-HO10, -HO20	M5-2935-6002	LED Chassis Green APEM	2		
6	+TX	-HO11, -HO12, -HO14, -HO15, -HO16, -HO17, -HO18, -HO19, -HST	M5-2935-6003	LED Chassis Yellow APEM	9		
7	+TX	-HO21	M5-2935-6005	LED Chassis Blue APEM	1		
8	+TX	-J8	M5-2823-4003	Cable for MC-KB2/3 2-pole	1		
9	+TX	-J12, -J13, -J21	M5-2823-4002	Cable for MC-KB2 8-pole Grey	3		
10	+TX	-J15, -J16, -J18, -J20, -J24, -J25	M5-2823-4001	Cable for MC-KB2 8-pole Black	6		
11	+TX	-J22	M5-2320-1815	Connector molex 2-pole Male	1		
12	+TX	-J22(2), -J23(2)	M5-2329-1856	Crimp terminal Molex Male for 2-pole	4		
13	+TX	-J23	M5-2320-1814	Plug Molex 2-pole F.male	1		
14	+TX	-M1(2)	M5-2003-3103	Handle MC-3000+/3300	2		
15	+TX	-M2	M5-2020-3301	ROD FOR MC-3300, LONG	1		
16	+TX	-M3	M5-2020-3302	ROD FOR MC-3300, SHORT	1		
17	+TX	-M4(2)	M5-2020-3007	Suspension bit	2		
18	+TX	-M5(4)	M5-2009-0607	O-ring for MC-3300 Handle	4		
19	+TX	-M6(4)	M5-2025-0003	WASHER 6.4 DIN 9021 ACID PROOF	4		



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\* Certificates are located on USB flash drive

Higher Level Assignment:				Location designation:			
Pos.	Location	Device Designation	Article Number	Description	No.	Ex Code	Ex Certificate
20	+TX	-M7(4)	M5-2023-3635	Screw Hex DIN 912 M6x35 A4	4		
21	+TX	-M8	M5-2009-0306	Neoprene Gasket for MC-3-Series	1		
22	+TX	-M9	M9-1003-3303	Terminal btm for MC-3300 EX	1		
23	+TX	-M10(8)	M5-2009-0528	O-ring for MC-3300 Main	8		
24	+TX	-M11(8)	M5-2025-5121	WASHER 6.4 DIN 9021 ACID PROOF	8		
25	+TX	-M12(8)	M5-2023-3530	Screw Hex DIN 912 M5x30 A4	8		
26	+TX	-M26	M9-1112-3001	Antenna RPSMA	1		
27	+TX	-M27, -M28	M9-2823-1400	V14 EX Analog Cable	2		
28	+TX	-N1	M9-2004-0000	Label Product General EX	1		
29	+TX	-N2	M5-2004-3900	Label product general Norway	1		
30	+TX	-Q1	M5-2152-1217	Switch Toggle 0-1	1		
31	+TX	-Q1	M5-2129-3002	Sealing Boot For Toggle Switch	1		
32	+TX	-R1	M5-2934-5002	Resistor 1K 0.6W	1		
33	+TX	-S0	M5-2140-0225	E-stop (NC)+(NO) Red	1		
34	+TX		M5-2217-1402	CG L/L L/L /1xPB=BLACK	2		
35	+TX						
36	+TX	-SA1-F28 / -SA2-F32	-SA3-F12 / -SA4-F16				
		-SA5-F27	M5-2215-2050	MJ-2K/66 Ana --PB F/F F/F /1PB	1		
		-SR1	M5-2116-4003	21mm Rotary Switch 10 position	1		
37	+TX	-SR1, -SR2, -SR3	M5-2119-4914	Cap for 21mm Operating handle	3		
38	+TX	-SR1, -SR2, -SR3	M5-2160-0913	Arrow for 21mm Operating Handle	3		
39	+TX	-SR1, -SR2, -SR3	M5-2119-4913	21*4mm Operating handle for Rotary Switch	3		
40	+TX	-SR2, -SR3	M5-2116-4004	21mm Rotary switch 6 position	2		
41	+TX	-SU1	M5-2000-3806	Bracket MC-Buzzer	1		
42	+TX	-SU1	M9-1061-2001	Buzzer	1		
43	+TX	-W1	M9-1112-3012	Antenna Cable 35cm RP-SMA-SMB Straight	1		

A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021	<div><div><b>CAVOTEC</b> We connect the future.</div></div>			6. Bill Of Material Bill Of Material		Project no.			
B	REMOVED IRQ -S0	06.01.2022	EF	name	EF						2104903T1B-1-2			
				Proved										
Rev.	WH	date	BN	GN		Origin	Repl. f.	Repl. by			Scale	Draw.no.		Sheet 10
												2104903T1B-1-2		Next 11



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A	ISSUED FOR CUSTOMER	13.09.2021	EF	date	15.09.2021
B	REMOVED IRQ -S0	06.01.2022	EF	name	EF
				Proved	
Rev.	WH	date	BN	GN	

Location designation:

\* Unit contains custom software  
or requires configuration



**CAVOTEC**  
We connect the future.

## 7. Rec Spare

### Recommended Spare Parts