

DOROS standard BPM system (BIDRS)

System mapping

BPM cable standard convention

v. 6/03/18

M. Gasior, BE-BHQ

cable no.	position	polarity	colour
n	exterior	H+	black
n + 1	interior	H-	red
n + 2	up	V+	yellow
n + 3	down	V-	white

BPMSW aperture = 61 mm (warm 120 mm stripline)  
 BPMRA aperture = 49 mm (cryo 24 mm buttons)  
 BPMSA aperture = 81 mm (warm 120 mm stripline)

Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch		Cable H+	Cable H-	Cable V+	Cables V-	New atenuators	Old attenuators
Q1 P1 L	BPMSW.1L1.B1	CFB-UJ14-BIDRS1	BY01.UJ14	0x81FF 8   00	08:00:30:F6:81:FF socket -> location ->	BY01.UJ14 3004/01 2119 0-0010	BY01 UJ14 A B1: socket #11 B2: socket #12	cable # attenuator # splitter #	11069 - 31 251 102	32 270 103	33 256 105	34 259 107	6	10
	BPMSW.1L1.B2						BST1 OK BST2 OK	cable # attenuator # splitter #	11069 - 35 210 108	36 246 113	37 216 109	38 239 110	9	12
Q2 P1 L <i>New 2018</i>	BPMSW.2L1.B1	CFB-UJ14-BIDRS2	BY01.UJ14	0x81FE 8   00	08:00:30:F6:81:FE socket -> location ->	BY01.UJ14 3004/02 2119 0-0010	BY01 UJ14 A	cable # attenuator # splitter #						
	BPMSW.2L1.B2							cable # attenuator # splitter #						
Q1 P1 R	BPMSW.1R1.B1	CFB-UJ16-BIDRS1	BY01.UJ16	0x8101 8   00	08:00:30:F6:81:01 socket -> location ->	BY01.UJ16 1705/01 2137 0-0001	BY01 UJ16 A B1: socket #11 B2: socket #12	cable # attenuator # splitter #	11069 - 39 233 111	40 283 114	41 222 112	42 229 115	9	12
	BPMSW.1R1.B2						BST1 OK BST2 OK	cable # attenuator # splitter #	11069 - 43 253 117	44 260 118	45 254 119	46 265 120	6	10
Q2 P1 R <i>New 2018</i>	BPMSW.2R1.B1	CFB-UJ16-BIDRS2	BY01.UJ16	0x8102 8   00	08:00:30:F6:81:02 socket -> location ->	BY01.UJ16 1705/02 2137 0-0001	BY01 UJ16 A	cable # attenuator # splitter #						
	BPMSW.2R1.B2							cable # attenuator # splitter #						

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Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch	Cable H+	Cable H-	Cable V+	Cables V-	New atenuators	Old attenuators
							BST1, BST2 missing						
Q7 P1 L	BPMRA.7L1.B1	CFB-RR13-BIDRS1	BY01.RR13	0x81F9 8   00	08:00:30:F6:81:F9 socket -> location ->	BY01.RR13 3110/01 3110 U-3110	BY01 RR13 A B1: socket #11 B2: socket #12	cable # attenuator # splitter #	11068 - 75 no attenuators	76	77	78	
	BPMRA.7L1.B2				ETH by fibre, 8 sockets seen as one socket 3110/01 switch P3110-R-IP3-SHP1S-E1			cable # attenuator # splitter #	11068 - 79 no attenuators	80	81	82	
							BST1, BST2 missing						
Q7 P1 R	BPMRA.7R1.B1	CFB-RR17-BIDRS1	BY01.RR17	0x8107 8   00	08:00:30:F6:81:07 socket -> location ->	BY01.RR17 3141/01 3141 U-3141	BY01 RR17 A B1: socket #11 B2: socket #12	cable # attenuator # splitter #	11069 - 95 no attenuators	96	97	1124288 !!!	
	BPMRA.7R1.B2				ETH by fibre, 8 sockets seen as one socket 3141/01 switch P3141-R-IP3-SHP1S-E2			cable # attenuator # splitter #	11069 - 99 no attenuators	00	01	02	
							BST2 missing						
AFP P1 L	BPM SA.A6L1.B2	CFB-RR13-BIDRS2	BY03.RR13	0x819F 4   10	08:00:30:F6:81:9F socket -> location ->	BY01.RR13 3110/01 3110 U-3110	BY01 RR13 A B2: socket #17	cable # attenuator # splitter #	11028 - 61 no splitters	62	63	64	10 dB, installed by Marek
				##### one BPM front-end ##### channels 5 - 8 disabled, CH config bits = "10" An "odd" left side BPM, so ID numbered from 0x100 - 0x61 = 9F (159)			ETH by fibre, 8 sockets seen as one socket 3110/01						
							BST1 missing						
AFP P1 R	BPM SA.A6R1.B1	CFB-RR17-BIDRS2	BY01.RR17	0x8161 4   10	08:00:30:F6:81:61 socket -> location ->	BY01.RR17 3141/01 3141 U-3141	BY01 RR17 A B1: socket #17	cable # attenuator # splitter #	11028 - 85 no splitters	86 143	87 173	88 156	168 10 dB, installed by Marek
				##### one BPM front-end ##### channels 5 - 8 disabled, CH config bits = "10" An "odd" right side BPM, so ID numbered from 0x61 ( 97)			ETH by fibre, 8 sockets seen as one socket 3141/01						

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n + 1	interior	H-	red
n + 2	up	V+	yellow
n + 3	down	V-	white

Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch		Cable H+	Cable H-	Cable V+	Cables V-	New atenuators	Old attenuators
Q1 P2 L	BPMSW.1L2.B1	CFB-UA23-BIDRS1	BY02.UA23	0x82FF 8   00	08:00:30:F6:82:FF socket -> location ->	BY01.UA23 8905/05 2218 R-0000	BY02 UA23 B1: socket #2 B2: socket #4	cable # attenuator # splitter #	12060 - 70	71	72	73		8
	BPMSW.1L2.B2		BPM cables in BY01				BST1 OK BST2 OK	cable # attenuator # splitter #	12060 - 74	75	76	77		8
Q1 P2 R	BPMSW.1R2.B1	CFB-UA27-BIDRS1	BY01.UA27	0x8201 8   00	08:00:30:F6:82:01 socket -> location ->	BY01.UA27 1105/06 2239 R-0001	BY01 UA27 A B1: socket #3 B2: socket #2	cable # attenuator # splitter #	12060 - 78	79	80	81		9
	BPMSW.1R2.B2					works with socket 04 !!!	BST1 missing BST2 OK	cable # attenuator # splitter #	12060 - 82	83	84	85		9
Q6 P2 R	BPM.6R2.B1	CFB-UA27-BIDRS2	BY03.UA27	0x8206 8   00	08:00:30:F6:82:06 socket -> location ->	BY03.UA27 9708/02 2239 R-0000		cable # attenuator # splitter #						
New 2018	BPMR.6R2.B2							cable # attenuator # splitter #						

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6L4.B1+B2      BPMYB.6L4.B1, BPMYA.6L4.B2      BY08.UA43

cable no.	position	polarity	colour
n	exterior	H+	black
n + 1	interior	H-	red
n + 2	up	V+	yellow
n + 3	down	V-	white

BPLX aperture = 81 mm (warm 400 mm stripline, data by Marek from the drawings)

Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch	Cable H+	Cable H-	Cable V+	Cables V-
BBQ RR47	BPLX.D6R4.B1	CFB-UA47-BIDRS1	BY06.UA47 cables	0x8401 8   00	08:00:30:F6:84:01 socket ->	BY05.UA47 8904/08	no timing FE in the tunnel	cable # attenuator # splitter #		FE in the tunnel no connection to BPMs	
on demand gated	BPLX.B6R4.B2		FE in RR47		free sockets:	8905/05 .. 08				system defined with "on demand gated" B1 and B2 striplines	
Q6 P4 L	BPMYB.6L4.B1	CFB-UA43-BIDRS1	BY08.UA43	0x84FA 8   00	08:00:30:F6:84:FA socket ->	BY08.UA43 B603/05		cable # attenuator # splitter #			
New 2018	BPMYA.6L4.B2				location ->	2418 U0-0001		cable # attenuator # splitter #			

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n + 1	interior	H-	red
n + 2	up	V+	yellow
n + 3	down	V-	white

Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch		Cable H+	Cable H-	Cable V+	Cables V-	New atetnuators	Old attenuators
Q1 P5 L	BPMSW.1L5.B1	CFB-USC55-BIDRS1	BY01.USC55	0x85FF 8   00	08:00:30:F6:85:FF old MCU socket -> location ->	BY03.USC55 1519/07 3524 1-0000	BY01 USC55 A B1: socket #11 B2: socket #12	cable # attenuator # splitter #	15082 - 38	39	40	41		
	BPMSW.1L5.B2				free sockets 1619/09..12		BST1 OK BST2 OK	cable # attenuator # splitter #	15082 - 42	43	44	45		
Q1 P5 R	BPMSW.1R5.B1	CFB-UJ56-BIDRS1	BY01.UJ56	0x8501 8   00	08:00:30:F6:85:01 socket -> location ->	BY01.UJ56 1307/01 2537 1-0000	BY01.UJ56 B1: socket #11 B2: socket #12	cable # attenuator # splitter #	15082 - 46	47	48	49		
	BPMSW.1R5.B2						both on lower patch BST1 OK BST2 OK	cable # attenuator # splitter #	15082 - 50	51	52	53		

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n	exterior	H+	black
n + 1	interior	H-	red
n + 2	up	V+	yellow
n + 3	down	V-	white

Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch	Cable H+	Cable H-	Cable V+	Cables V-
Q5 P6 L  New 2018	BPMYA.5L6.B1	CFB-UA63-BIDRS1	BY02.UA63	0x86FB 8   00	08:00:30:F6:86:FB socket -> location ->	BY02 5304/06 2618 R-0001		cable # attenuator # splitter #			
	BPMYA.5L6.B2							cable # attenuator # splitter #			
Q5 P6 R  New 2018	BPMYA.5R6.B1	CFB-UA67-BIDRS1	BY02.UA67	0x8605 8   00	08:00:30:F6:86:05 socket -> location ->	BY02 4804/06 2639 R-4804		cable # attenuator # splitter #			
	BPMYA.5R6.B2							cable # attenuator # splitter #			

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n + 1	interior	H-	red
n + 2	up	V+	yellow
n + 3	down	V-	white

Location	BPM	Device name	Rack	DOROS FE ID active ch.   config bits	FE MAC	ETH rack / sockets	Timing patch		Cable H+	Cable H-	Cable V+	Cables V-	New atenuators	Old attenuators
Q1 P8 L	BPMSW.1L8.B1	CFB-UA83-BIDRS1	BY02.UA83	0x88FF 8   00	08:00:30:F6:88:FF socket -> location ->	BY02.UA83 H606/02 2818 U0-0001	BY02 UA83 A B1: socket #5 B2: socket #2	cable # attenuator # splitter #	18108 - 58	59	60	61		10
	BPMSW.1L8.B2		BPM cables in BY01				BST1 missing BST2 missing	cable # attenuator # splitter #	18108 - 62	63	64	65		10
Q1 P8 R	BPMSW.1R8.B1	CFB-UA87-BIDRS1	BY01.UA87	0x8801 8   00	08:00:30:F6:88:01 socket -> location ->	BY01.UA87 2205/04 2839 U0-0001	BY01 UA87 B B1: socket #3 B2: socket #4	cable # attenuator # splitter #	18108 - 66	67	68	69		9
	BPMSW.1R8.B2						BST1 missing BST2 missing	cable # attenuator # splitter #	18108 - 70	71	72	73		9
Q6 P8 L New 2018	BPMR.6L8.B1	CFB-UA83-BIDRS2	BY05.UA83	0x88FA 8   00	08:00:30:F6:88:FA socket -> location ->	BY05.UA83 2606/07 2818 U0-0001		cable # attenuator # splitter #						
	BPMR.6L8.B2							cable # attenuator # splitter #						
Q6 P8 R New 2018	BPM.6R8.B1	CFB-UA87-BIDRS2	BY06.UA87	0x8806 8   00	08:00:30:F6:88:06 socket -> location ->	BY07.UA87 J611/05 2839 U0-0001		cable # attenuator # splitter #						
	BPM.6R8.B2							cable # attenuator # splitter #						

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System mapping

DEV SPS front-ends

Location	BPM	Device name	Rack	DOROS FE ID	FE MAC	ETH rack / sockets	Timing patch	Cable H+	Cable H-	Cable V+	Cables V-		
SPS MOPOS DEV	MOPOS BPMs	CFB-HCA4-BIDRS1	HCA4 RA1217	0x9A41	08:00:30:F6:9A:41	?HCA4 socket -> 1817/07 location -> 0921 S2-0001	no timing	cabling dynamically changing					
### moved to 0x9A41 on 2/06/17 ###													
SPS DOROS DEV	not conencted	CFB-HCA4-BIDRS1	?	0x8A41	08:00:30:F6:8A:41	?HCA4 socket -> 2317/03 location -> 0921 S2-0001	no timing -< free 2317/04	Cable H+ (ext)	Cable H- (int)	Cable V+ (up)	Cables V- (down)	BPM	
### FE not present, moved to BA4 , BPMs never conencted to the FE ###													
SPS DOROS in BA5	BPMBV 518 aperture 83 mm	CFB-ECA5-BIDRS1	?	0x8A51	08:00:30:F6:8A:51	? 2325/01 0899 S1-2325		Cable H+	Cable H-	Cable V+	Cables V-		
	BPMBH 520 aperture 156 mm												
								cable # attenuator	35008 - 50 10 dB / 5W	51 10 dB / 5W	49 10 dB / 5W	48 10 dB / 5W	channels 1 .. 4
								cable # attenuator	35008 - 57 10 dB / 5W	56 10 dB / 5W	58 10 dB / 5W	59 10 dB / 5W	channels 5 .. 8
SPS DOROS crab BA6		CFB-BA6-BIDRS1	BA60 RA1322	0x8A61	08:00:30:F6:8A:61	BA60 RA1321 2706/04 0873 R-0010		Cable H+	Cable H-	Cable V+	Cables V-		
								cable # attenuator					channels 1 .. 4
								cable # attenuator					channels 5 .. 8



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System mapping

DEV lab front-ends

Location	BPM	Device name	Rack	DOROS FE ID	FE MAC	ETH rack / sockets	Timing patch	Comments
0866 1-0A17	labo system 1	CFB-866-BIDRD1	labo	0x9F01	08:00:30:F6:9F:01	0A21/04	labo	
0866 1-0A17	labo system 2	CFB-866-BIDRD2	labo	0x9F02	08:00:30:F6:9F:02	0A21/04	labo	
0866 1-0A17	labo system 3	CFB-866-BIDRD3	labo	0x9F03	08:00:30:F6:9F:03	0A21/04	labo	
0866 1-0A17	labo system 4	CFB-866-BIDRD4	labo	0x9F04	08:00:30:F6:9F:04	0A21/04	labo	new 2017
0866 1-0A24	labo system 5	CFB-866-BIDRD5	Mark's desk	0x9F05	08:00:30:F6:9F:05	0A24/02	-	new 2017
0866 1-0A17	labo system 6	CFB-866-BIDRD6	labo	0x9F06	08:00:30:F6:9F:06	0A21/04	labo	new 2017
0866 1-0A17	labo system 7	CFB-866-BIDRD7	labo	0x9F07	08:00:30:F6:9F:07	0A21/04	labo	new 2017
0866 1-0A17	labo system 8	CFB-866-BIDRD8	labo	0x9F08	08:00:30:F6:9F:08	0A21/04	labo	new 2017

all on the same socket

socket -> 0021/04  
location -> 0866 1A-0017

Storage 866	storage system 1	CFB-866-BIDRD16	labo	0x9F10	08:00:30:F6:9F:10	storage rack	storage	
Storage 866	storage system 2	CFB-866-BIDRD17	labo	0x9F11	08:00:30:F6:9F:11	storage rack	storage	
Storage 866	storage system 3	CFB-866-BIDRD18	labo	0x9F12	08:00:30:F6:9F:12	storage rack	storage	
Storage 866	storage system 4	CFB-866-BIDRD19	labo	0x9F13	08:00:30:F6:9F:13	storage rack	storage	
Storage 866	storage system 5	CFB-866-BIDRD20	labo	0x9F14	08:00:30:F6:9F:14	storage rack	storage	new 2017
Storage 866	storage system 6	CFB-866-BIDRD21	labo	0x9F15	08:00:30:F6:9F:15	storage rack	storage	new 2017
Storage 866	storage system 7	CFB-866-BIDRD22	labo	0x9F16	08:00:30:F6:9F:16	storage rack	storage	new 2017
Storage 866	storage system 8	CFB-866-BIDRD23	labo	0x9F17	08:00:30:F6:9F:17	storage rack	storage	new 2017

all on the same socket

socket -> 0406/01  
location -> 0866 1-0406

FE channel	Plane	Input	DOROS FE ID convention				DOROS MAC address = 08:00:30:F6: + FE ID		
			bit	length	function	value			
1	1	horizontal positive, BPM 1	15 ... 12	4	system ID	0	forbidden	FE names	loc = location, e.g. USC55 xx = sequential number 1, 2, 3, ...
2		horizontal negative, BPM 1							
3	2	vertical positive, BPM 1				1	collimator BPMs	CFB-loc-BIDRCxx	DOROS for collimator BPMs
4		vertical negative, BPM 1				2	development collimator BPMs		
5	3	horizontal positive, BPM 2				8	standard BPMs	CFB-loc-BIDRSxx	DOROS for standard BPMs
6		horizontal negative, BPM 2				9	development standard BPMs		
7	4	vertical positive, BPM 2	11 ... 8	4	location	0	forbidden		
8		vertical negative, BPM 2				1	LHC point 1		

DOROS FE possible configurations:

- BPM 1/2 = B1/B2
- BPM 1/2 = B1/B1
- BPM 1/2 = B2/B2

timing 1: plane 1 (H): ch1 +, ch2 -  
plane 2 (V): ch3 +, ch4 -  
timing 2: plane 3 (H): ch5 +, ch6 -  
plane 4 (V): ch7 +, ch8 -

- 2 LHC point 2
- 3 LHC point 3
- 4 LHC point 4
- 5 LHC point 5
- 6 LHC point 6
- 7 LHC point 6
- 8 LHC point 8
- ...
- 10 SPS -----> HEX unit ID starts with the sextant number, i.e. 41 = fist FE in sextant 4
- ...
- 15 lab

BPM cable standard convention

cable no.	position	polarity	colour	bit	length	function	value			
n	exterior	H+	black	7 ... 0	8	unit ID	0	forbidden	... FB - FC - FD - FE - FF - ### POINT ### - 01 - 02 - 03 - 04 - 05 ...	
n + 1	interior	H-	red							
n + 2	up	V+	yellow							
n + 3	down	V-	white							
							1 ... 127	LHC right IP side		
							255 ... 128	LHC left IP side (U2 negative numbers)		

Channel config bits

- 00 - all 1..8 channels enabled (most of the front-ends)
- 01 - channels 7..8 disabled (no such a case in the S system, only one in the C system, FE for TCSPM.D4R7.B2)
- 10 - channels 5..8 disabled (one BPM front-ends, in the S system only AFP FEs at P1)
- 11 - channels 3..8 disabled (no such a case yet)