

Appendix H:

Design of Dual-Loco– Train Interfaces

The Supplier is fully responsible to identify the necessary interface characteristics (27-pin and 61 pin connector) which are necessary to operate the relevant Rolling Stock of ISR as defined in this specification.

H.1.1 Definition for the currently used pin layout of multi conductor reversible control line (37 wires)

Reversible Control Train Line		
No.	in Dual-Loco	in Coach
1	Green Loop (Safety Loop)	Green Loop (Safety Loop)
2	Alarm Signal	Alarm Signal
3	DV Effort Setpoint	DV Effort Setpoint
4	Battery Negative	Battery Negative
5	Ready to Run	Ready to Run
6	Generator Field	Generator Field
7	CV Effort Setpoint	CV Effort Setpoint
8	Forward	Forwards
9	Reverse	Reverse
10	Wheel Slip	Wheel Slip
11	Cab Interlocking	Cab Interlocking
12	BV Effort Setpoint	BV Effort Setpoint
13	Battery Positive	Battery Positive
14	Ready to Depart	Ready to Depart
15	AV Effort Setpoint	AV Effort Setpoint
16	Engine Run	Engine Run
17	Dynamic Brake (B)	Dynamic Brake (B)
18	Right Doors Opening Permission	Right Doors Opening Permission
19	Left Doors Opening Permission	Left Doors Opening Permission
20	Dynamic Brake Warning	Dynamic Brake Warning
21	Dynamic Brake Control (BG)	Dynamic Brake Control (BG)
22	Doors Opening cancellation	Doors Opening cancellation
23	Green Loop (Safety Loop)	Green Loop (Safety Loop; multiple operation DD)
24	Dynamic Brake Setpoint	Dynamic Brake Setpoint

Reversible Control Train Line		
No.	in Dual-Loco	in Coach
25	Direct Brake / Parking Brake Applied	Direct Brake / Parking Brake Applied
26	Right Doors Opening Permission warning	Battery Positive
27	Left Doors Opening Permission warning	Battery Positive
28		Battery Negative
29		Right Doors Opening Permission warning
30		Left Doors Opening Permission warning
31		Battery Negative
32		Battery Negative
33		Screen of Wire 26/34 in the male side
34		Battery Positive
35		Battery Positive
36		Spare
37		Screen of Wire 27/35 in the male side

**H.1.2 Definition for the use of the multi conductor control cable (61 wires):
 exemplary for DDPP160 and SDPP trains manufactured by Bombardier
 and Siemens, respectively.**

61- Wire Multi Control Cable			
No.	Function in Loco	Function in Coach (inside DDPP160)	Function in Coach (inside SPPD Siemens)
1		24V DC Minus	24V DC Minus Train Generator
2		24V DC Minus	24V DC Minus Train Battery Charger
3		24V DC Minus	Available
4		24V DC Minus	24V DC Minus Global Door Control
5		24V DC Minus	24V DC Minus Train
6		24V DC Minus	Available
7		Any Connected Battery	24V DC Positive Train
8		Any Disconnected Battery	Parking Brake Applied Train
9		Train Battery Connected	Battery Charger ON/OFF Train
10		Train Battery Disconnected	24V DC Generator
11		Negative 72VDC Exterior Loop Net	Negative 72VDC Exterior Loop Net
12		Train Light Connection	Available
13		Train Light Disconnection	Climate Plus
14		Train Air Conditioning Connection	Climate Train ON/OFF
15		Train Air Conditioning Disconnection	Power supply Train Fast OFF
16	UIC 5	UIC 5	UIC 5
17	UIC 6	UIC 6	UIC 6
18	UIC 7	UIC 7	UIC 7
19	UIC 8	UIC 8	UIC 8
20		Train Supply	Ext. Power Supply
21		Left Doors Opening Permission by Driver	Right Doors Opening Permission by Driver

61- Wire Multi Control Cable			
No.	Function in Loco	Function in Coach (inside DDPP160)	Function in Coach (inside SPPD Siemens)
22		Right Doors Opening Permission by Driver	Left Doors Opening Permission by Driver
23		Left Doors Opening Permission by Conductor	Left Doors Opening Permission by Conductor
24		Right Doors Opening Permission by Conductor	Right Doors Opening Permission by Conductor
25		General Close by conductor Left Side	General Close by conductor Left Side
26		General Close by conductor Right Side	General Close by conductor Right Side
27		Ready to Depart	Ready to Depart
28		General Opening Left Side by Conductor	24V DC Battery + Global Door Control
29		General Opening Right Side by Conductor	Available
30		Available	Available
31		Out A0	Door Safety Loop (Right)
32		Out A1	Door Safety Loop (Left)
33		Alarm Train Class 3	UIC 9
34		Green Loop	UIC 10
35		Green Loop 24VDC	UIC 11
36		Parking Brake 24VDC	UIC 12
37		Parking Brake	Power Save Mode
38		Available	Energy Busbar OFF Trainline 1
39		Available	Energy Busbar OFF Trainline 2
40		Available	Available
41		Out A2	Gen. Set 1(2) First
42		Out A3	Gen. Set 2(1) First
43		Out A4	Gen. Set First Minus
44		Out A5	Available
45		Available	Available
46	IBIS Train Bus	IBIS Train Bus (UIC 17)	PIS Control A+
47	IBIS Train Bus	IBIS Train Bus (UIC 18)	PIS Control A-

61- Wire Multi Control Cable			
No.	Function in Loco	Function in Coach (inside DDPP160)	Function in Coach (inside SPPD Siemens)
48	WTB-Bus Diagnostic Line 1	WTB-Bus Diagnostic Line 1	WTB-Bus Diagnostic
49	WTB-Bus Diagnostic Line 1	WTB-Bus Diagnostic Line 1	WTB-Bus Diagnostic
50	UIC 1 NF	Audio Frequency (UIC 1)	UIC 1 NF
51	UIC 2 NF	Audio Frequency (UIC 2)	UIC 2 NF
52	UIC 3 Intercom	Telephone (UIC 3)	UIC 3 Intercom
53	UIC 4 Intercom	Telephone (UIC 4)	UIC 4 Intercom
54		Available	Available
55		WTB-Bus Diagnostic Line 2	Available
56	Shield Wire 46/47	Shield Wire 46/47	Shield Wire 46/47
57	Shield Wire 48/49	Shield Wire 48/49	Shield Wire 48/49
58	UIC 13 SCR (Shield Wire 50/51)	UIC 13 SCR (Shield Wire 50/51)	UIC 13 SCR (Shield Wire 50/51)
59	Shield Wire 52/53	Shield Wire 52/53	Shield Wire 52/53
60		WTB-Bus Diagnostic Line 2	Available
61		Shield Wire 55/60	Available