

HBC radio controls with Ex approval (ATEX)




Equipment group	I (Mining)	II (other potentially explosive areas)					
Atmosphere		Gas (G)				Dust (D)	
Equipment category (zone)	M2	2G (Zone 1)		3G (Zone 2)		2D (Zone 21)	3D (Zone 22)
Group		IIB	IIC	IIB	IIC		

HBC transmitters

quadrix Ex 	I M2 Ex ia I Mb Z-G00117	II 2G Ex ia IIB T4 Gb Z-G00117		II 2G Ex ia IIB T4 Gb Z-G00117		II 2D Ex ia IIIC T100°C Db Z-G00117	II 2D Ex ia IIIC T100°C Db Z-G00117
micron 4 				II 3G Ex ic IIC T5 Gc Z-G00134	II 3G Ex ic IIC T5 Gc Z-G00134		
micron 5 Ex 	I M2 Ex ib I Mb Z-G00156	II 2G Ex ib IIB T4 Gb Z-G00156		II 2G Ex ib IIB T4 Gb Z-G00156		II 2D Ex ib IIIC T100°C Db Z-G00156	II 2D Ex ib IIIC T100°C Db Z-G00156
micron 7 Ex 	I M2 Ex ib I Mb Z-G00157	II 2G Ex ib IIB T4 Gb Z-G00157		II 2G Ex ib IIB T4 Gb Z-G00157		II 2D Ex ib IIIC T100°C Db Z-G00157	II 2D Ex ib IIIC T100°C Db Z-G00157
spectrum devices ATEX category 3 Housing sizes spectrum 2 / B / 3 				II 3G Ex ic IIB T4 Gc X Z-G00180			II 3D Ex ic IIIC T135°C Dc X Z-G00180
spectrum Ex Housing sizes spectrum 2 / B / 3 	I M2 Ex ib I Mb Z-G00147	II 2G Ex ib IIB T4 Gb Z-G00143		II 2G Ex ib IIB T4 Gb Z-G00143		II 2D Ex ib IIIC T135°C Db Z-G00143	II 2D Ex ib IIIC T135°C Db Z-G00143
spectrum Ex IIC Housing size spectrum 2 		II 2G Ex ib IIC T4 Gb Z-G00151	II 2G Ex ib IIC T4 Gb Z-G00151	II 2G Ex ib IIC T4 Gb Z-G00151	II 2G Ex ib IIC T4 Gb Z-G00151	II 2D Ex ib IIIC T135°C Db Z-G00151	II 2D Ex ib IIIC T135°C Db Z-G00151

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	Atmosphere	M2	Gas (G)				Dust (D)	
			2G (zone 1)		3G (zone 2)		2D (zone 21)	3D (zone 22)
			IIB	IIC	IIB	IIC		
HBC receivers								
FSE 516 (HR270)					⚠ II 3G Ex nA nC IIC T4 X Gc Z-G00133	⚠ II 3G Ex nA nC IIC T4 X Gc Z-G00133		⚠ II 3D Ex tc IIIC T80°C X Dc Z-G00133
FSE 524 (HR270)					⚠ II 3G Ex nA nC IIC T4 X Z-G00136	⚠ II 3G Ex nA nC IIC T4 X Z-G00136		⚠ II 3D Ex t IIIC T80°C Dc Z-G00136
FSE 726 radiobus®			⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2D Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2D Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018
FSE 727 radiobus®			⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2D Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2D Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018
FSE 736 radiobus® (HR270)			⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	⚠ II 3G Ex nA nC IIC T4 X Gc Z-G00138	⚠ II 3G Ex nA nC IIC T4 X Gc Z-G00138	⚠ II 2D Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00022	⚠ II 3D Ex t IIIC T80°C Dc Z-G00138
FSE 737 radiobus® (HR270)			⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	⚠ II 2G Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	⚠ II 3G Ex nA nC IIC T4 X Gc Z-G00139	⚠ II 3G Ex nA nC IIC T4 X Gc Z-G00139	⚠ II 2D Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00022	⚠ II 3D Ex t IIIC T80°C Dc Z-G00139

HBC radio controls with Ex approval (ATEX)



Equipment group	I (Mining)	II (other potentially explosive areas)					
Atmosphere		Gas (G)				Dust (D)	
Equipment category (zone)	M1	2G (Zone 1)		3G (Zone 2)		2D (Zone 21)	3D (Zone 22)
Group		IIB	IIC	IIB	IIC		

HBC antennas *

AA050026		405 – 470 MHz	 I M1 Ex ia I Ma	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2D Ex ia IIIC T135°C Db	 II 2D Ex ia IIIC T135°C Db
A-A00072			Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187
AA050027		870 – 950 MHz	 I M1 Ex ia I Ma	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2D Ex ia IIIC T135°C Db	 II 2D Ex ia IIIC T135°C Db
A-A00073			Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187
AA050028		2300 – 2500 MHz	 I M1 Ex ia I Ma	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2G Ex ia IIC T6 Gb	 II 2D Ex ia IIIC T135°C Db	 II 2D Ex ia IIIC T135°C Db
A-A00074			Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187	Z-G00187

* In connection with an antenna coupling module in the receiver.

HBC radio controls with Ex approval (IECEx)







Atmosphere	Mining	Gas (G)				Dust (D)	
Equipment protection level	Mb	Gb (zone 1)		Gc (zone 2)		Db (zone 21)	Dc (zone 22)
Group		IIB	IIC	IIB	IIC		

HBC transmitters

micron 5 Ex 	Ex ib I Mb Z-G00154	Ex ib IIB T4 Gb Z-G00154		Ex ib IIB T4 Gb Z-G00154		Ex ibD21 T100 °C Db IP6X Z-G00154	Ex ibD21 T100 °C Db IP6X Z-G00154
micron 7 Ex 	Ex ib I Mb Z-G00155	Ex ib IIB T4 Gb Z-G00155		Ex ib IIB T4 Gb Z-G00155		Ex ib IIC T100 °C Db Z-G00155	Ex ib IIC T100 °C Db Z-G00155
spectrum Ex Housing sizes spectrum 2 / B / 3 	Ex ib I Mb Z-G00148	Ex ib IIB T4 Gb Z-G00144		Ex ib IIB T4 Gb Z-G00144		Ex ib IIC T135 °C Db Z-G00144	Ex ib IIC T135 °C Db Z-G00144
spectrum Ex IIC Housing size spectrum 2 		Ex ib IIC T4 Gb Z-G00152	Ex ib IIC T4 Gb Z-G00152	Ex ib IIC T4 Gb Z-G00152	Ex ib IIC T4 Gb Z-G00152	Ex ib IIC T135 °C Db Z-G00152	Ex ib IIC T135 °C Db Z-G00152

HBC receivers

FSE 726 radiobus® 		Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018
FSE 727 radiobus® 		Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00018	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00018
FSE 736 radiobus® 		Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00022	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00022
FSE 737 radiobus® 		Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex de IIC T6 (receiver in pressure-resistant enclosure) A-G00022	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00022	Ex tD A21 IP66 T80°C (receiver in pressure-resistant enclosure) A-G00022

HBC radio controls with Ex approval (IECEx)



Atmosphere	Mining	Gas (G)				Dust (D)	
Equipment protection level	Ma	Gb (zone 1)		Gc (zone 2)		Db (zone 21)	Dc (zone 22)
Group		IIB	IIC	IIB	IIC	IIB	IIC



HBC antennas *



AA050026 A-A00072	 405 – 470 MHz	Ex ia I Ma Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIIC T135°C Db Z-G00188	Ex ia IIIC T135°C Db Z-G00188
AA050027 A-A00073	 870 – 950 MHz	Ex ia I Ma Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIIC T135°C Db Z-G00188	Ex ia IIIC T135°C Db Z-G00188
AA050028 A-A00074	 2300 – 2500 MHz	Ex ia I Ma Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIC T6 Gb Z-G00188	Ex ia IIIC T135°C Db Z-G00188	Ex ia IIIC T135°C Db Z-G00188

* In connection with an antenna coupling module in the receiver.

HBC radio controls with Ex approval (NEC / CEC)



NEC 500 / CEC Appendix J		
Class	Class I	
Division	Division 1	Division 2
HBC transmitters		
quadrix Ex 	Class I, Division 1, Group C,D T4 Z-G00130	Class I, Division 1, Group C,D T4 Z-G00130
spectrum Ex Housing sizes: spectrum 2 / B / 3 	Class I, Division 1, Group C,D T4 Z-G00145	Class I, Division 1, Group C,D T4 Z-G00145

NEC 505 / CEC Section 18			
Class	Class I		
Division	Zone 0	Zone 1	Zone 2
HBC transmitters			
quadrix Ex 	Class I Zone 0 AEx / Ex ia IIB T4 Z-G00130	Class I Zone 0 AEx / Ex ia IIB T4 Z-G00130	Class I Zone 0 AEx / Ex ia IIB T4 Z-G00130
spectrum Ex Housing sizes: spectrum 2 / B / 3 	Class I Zone 0 AEx / Ex ia IIB T4 Z-G00145	Class I Zone 0 AEx / Ex ia IIB T4 Z-G00145	Class I Zone 0 AEx / Ex ia IIB T4 Z-G00145

HBC radio controls with Ex approval (TR CU 012)



Equipment group	I (Mining)	II (other potentially explosive areas)					
Atmosphere		Gas (G)				Dust (D)	
Equipment category (zone)	M2	2G (Zone 1)		3G (Zone 2)		2D (Zone 21)	3D (Zone 22)
Group		IIB	IIC	IIB	IIC		

HBC transmitters							
quadrix Ex 	PBEx ia I Mb Z-G00158	1Ex ia IIB T4 Gb Z-G00158		1Ex ia IIB T4 Gb Z-G00158		Ex ia IIIC T100°C Db Z-G00158	Ex ia IIIC T100°C Db Z-G00158
micron 4 				2Ex ic IIC T5 Gc Z-G00159	2Ex ic IIC T5 Gc Z-G00159		
micron 5 Ex 	PBEx ib I Mb Z-G00160	1Ex ib IIB T4 Gb Z-G00160		1Ex ib IIB T4 Gb Z-G00160		Ex ib IIIC T100°C Db Z-G00160	Ex ib IIIC T100°C Db Z-G00160
micron 7 Ex 	PBEx ib I Mb Z-G00161	1Ex ib IIB T4 Gb Z-G00161		1Ex ib IIB T4 Gb Z-G00161		Ex ib IIIC T100°C Db Z-G00161	Ex ib IIIC T100°C Db Z-G00161
spectrum Ex Housing sizes spectrum 2 / B / 3 	PBEx ib I Mb Z-G00162	1Ex ib IIB T4 Gb Z-G00163		1Ex ib IIB T4 Gb Z-G00163		Ex ib IIIC T135°C Db Z-G00163	Ex ib IIIC T135°C Db Z-G00163
spectrum Ex IIC Housing size spectrum 2 		1Ex ib IIC T4 Gb Z-G00164	1Ex ib IIC T4 Gb Z-G00164	1Ex ib IIC T4 Gb Z-G00164	1Ex ib IIC T4 Gb Z-G00164	Ex ib IIIC T135°C Db Z-G00164	Ex ib IIIC T135°C Db Z-G00164

HBC radio controls with Ex approval (TR CU 012)



Equipment group	I (Mining)	II (other potentially explosive areas)					
Atmosphere		Gas (G)				Dust (D)	
Equipment category (zone)	M2	2G (Zone 1)		3G (Zone 2)		2D (Zone 21)	3D (Zone 22)
Group		IIB	IIC	IIB	IIC		




HBC receivers

FSE 516 (HR270)					2Ex nA nC IIC T4 Gc X Z-G00166	2Ex nA nC IIC T4 Gc X Z-G00166		Ex tc IIIC T80°C Dc X Z-G00166
FSE 524 (HR270)					2Ex nA nC IIC T4 Gc X Z-G00167	2Ex nA nC IIC T4 Gc X Z-G00167		Ex tc IIIC T80°C Dc X Z-G00167
FSE 736 radiobus® (HR270)					2Ex nA nC IIC T4 Gc X Z-G00168	2Ex nA nC IIC T4 Gc X Z-G00168		Ex tc IIIC T80 °C Dc X Z-G00168
FSE 737 radiobus® (HR270)					2Ex nA nC IIC T4 Gc X Z-G00169	2Ex nA nC IIC T4 Gc X Z-G00169		Ex tc IIIC T80 °C Dc X Z-G00169

Equipment for HBC radio systems with Ex approval



HBC batteries and battery chargers		
HBC transmitters	HBC batteries	HBC chargers
quadrix Ex 	BE223001	QE108600 QE108300
micron 4 	BF223000	QA108600 QD108300
micron 5 Ex 	BE223000	QE108600 QE108300
micron 7 Ex 	BE223000 BE223001	QE108600 QE108300
spectrum devices category 3 Housing sizes: spectrum 2 / B / 3 	BF225000	QE109600 QE109300
spectrum Ex Housing sizes: spectrum 2 / B / 3 	BE225000	QE109600 QE109300
spectrum Ex IIC Housing size: spectrum 2 	BE225000	QE109600 QE109300

Pressure-resistant enclosure		
	Marking	HBC receivers
	II 2G Ex de IIC T6 II 2D Ex tD A21 IP66 T80°C	FSE 726 radiobus® FSE 727 radiobus®
	II 2G Ex de IIC T6 II 2D Ex tD A21 IP66 T80°C	FSE 736 radiobus® FSE 737 radiobus®
	II 2G Ex d IIB T6 II 2D Ex tD A21 IP6x T80°C	FSE 736 radiobus® FSE 737 radiobus®