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Comparing the Serial Link frames and bit assignments of the AGS Medium Resolution PS Interface and the RHIC Medium Resolution PS Interface with Scaling

1. AGS Medium Resolution Interface for Injection Power Supplies

Frames

Setpoint Frame Parameter ID Field

Bit 7	0	always zero
Bit 6	0 or 1	Group A/B Select
Bit 5	0	always zero
Bit 4	1	always one
Bit 3	0	always zero
Bit 2	1	always one
Bit 1	0	always zero
Bit 0	1	always one

Loopback Frame

Identical to Setpoint Frame

Readback Frames Parameter ID Fields

Bit 7	1	always one
Bit 6	0 or 1	MuxA2 (Group A/B Select)
Bit 5	A2	Channel Address
Bit 4	A1	Channel Address
Bit 3	0 or 1	EOCerr OR CRCerr OR FRMerr
Bit 2	0 or 1	BP/UP/
Bit 1	0	
Bit 0	0	
A2	A1	
0	0	Measured I
0	1	Measured V
1	0	Measured I dot
1	1	Measured I ddot

Data

Bit 23	sign	Bipolar Mode
Bit 22	msb	Unipolar Mode
Bit 21-9	data	
Bit 8	lsb	Bipolar Mode
Bit 7	lsb	Unipolar Mode

2. RHIC Medium Resolution Interface with Scaling for Insertion Region Power Supplies

Frames

Primary and Secondary Frame Parameter ID Field

Bit 7	0	always zero
Bit 6	1	always one
Bit 5	0	always zero

Bit 4	1	always one
Bit 3	0	always zero
Bit 2	1	always one
Bit 1	0	always zero
Bit 0	1	always one

Loopback Frame

Identical to Primary Frame

Readback Frames Parameter ID Fields

Bit 7	1	always one
Bit 6	0	always zero
Bit 5	A2	Channel Address
Bit 4	A1	Channel Address
Bit 3	0 or 1	Error
Bit 2	0 or 1	Status
Bit 1	0	
Bit 0	0	

A2	A1		Error	Status	
0	0	Setpoint	Primary Link Error	BP/UP/	BP=1, UP=0
0	1	Secondary Data	Secondary Link Error	Dual/Sing	Dual =1, Sing=0
1	0	Scaling	Overflow	Module Type	S-P=1, P-S=0
1	1	Scaling	0	0	

Notes:

Primary Frame Link Error is sent as a status bit with the setpoint readback.
 Secondary Frame Link Error is sent as a status bit with the secondary frame readback.
 Overflow Error is sent as a status bit with only the first scaling frame.

Secondary Link Errors are ignored if unit is in sing mode.

Data for Setpoint and Secondary Readback Frames

Bit 23	sign	Bipolar Mode
Bit 23	0	Unipolar Mode
Bit 22	msb	Unipolar Mode
Bit 21-0	data	

Data for Scaling Readback Frame

Bits 23-16	Multiply (numerator)
Bits 15-8	Divide (denominator)
Bits 7-0	0 (always Zero)