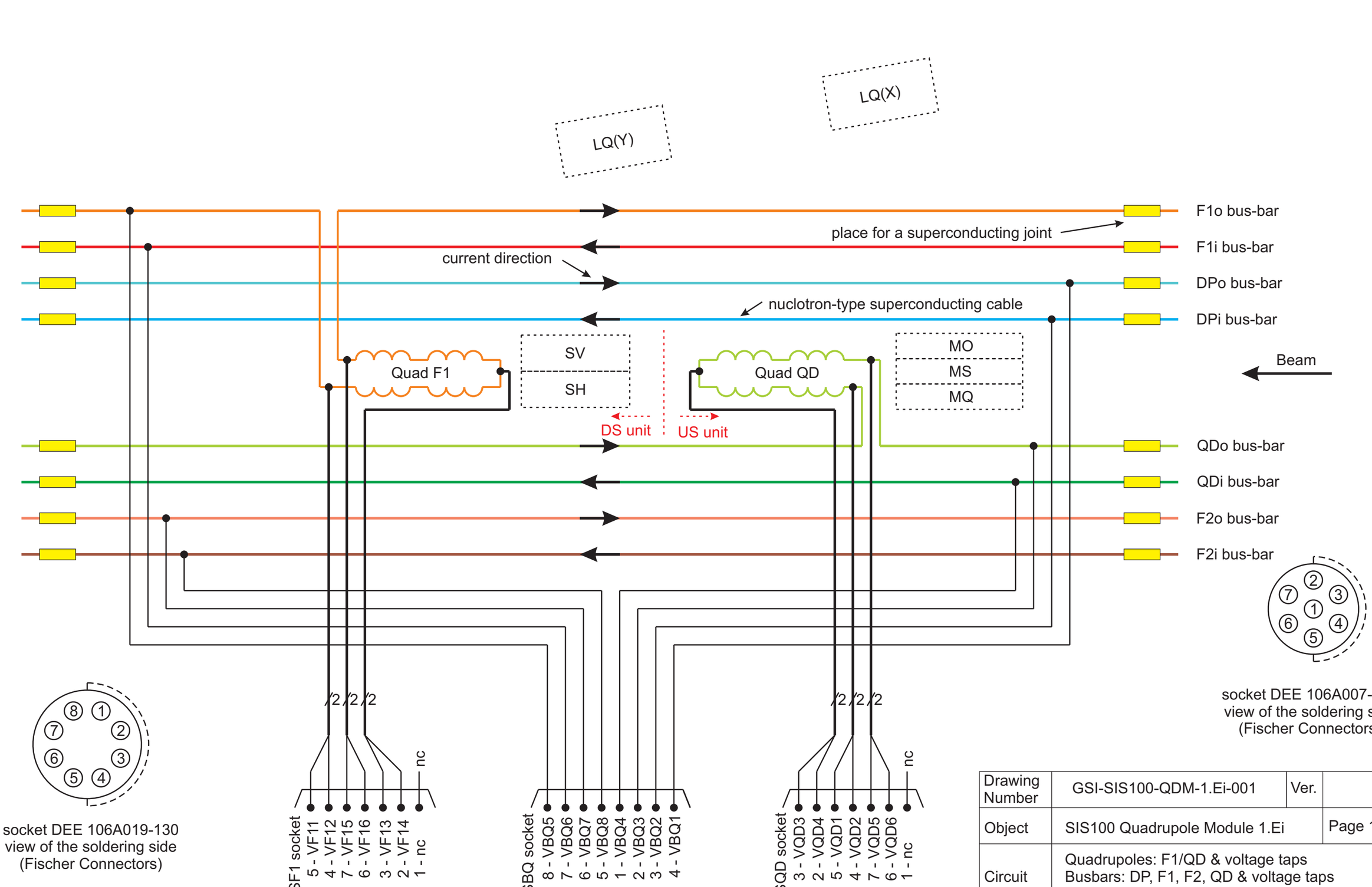
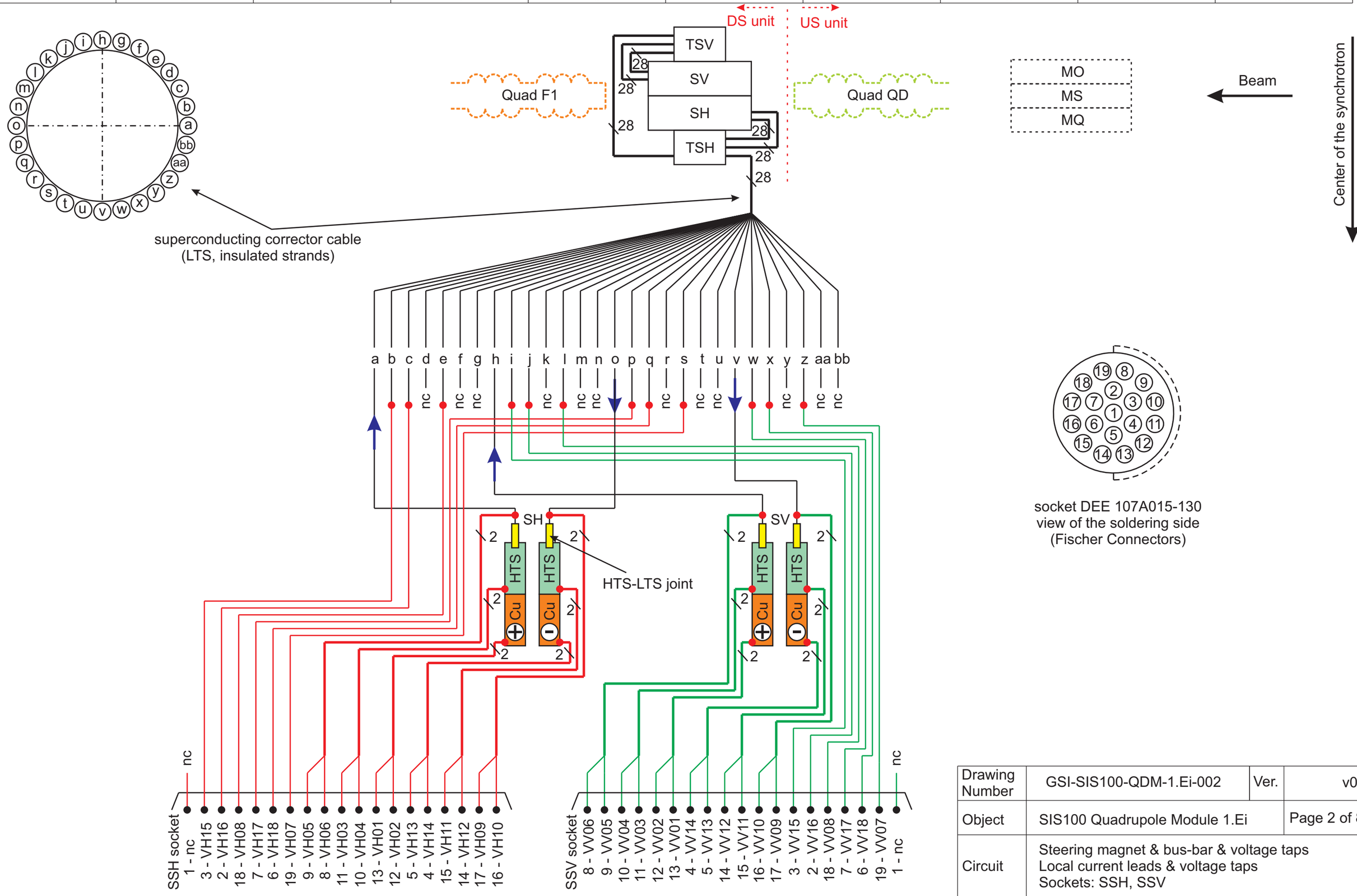
EDMS 1447831 v.7 status Released access Restricted
sis100_qdm_1_Ei__24Feb2015.pdf modified 2015-03-19 14:26



Drawing Number	GSI-SIS100-QDM-1.Ei-001	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 1 of 8
Circuit	Quadrupoles: F1/QD & voltage taps Busbars: DP, F1, F2, QD & voltage taps Sockets: SBQ, SF1 & SQD		
Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	W. Freisleben (PBMT)	Date	2015-Feb-24

Comments: voltage tap wire: HH-2619-LH (Axon GmbH); each socket shall receive its own voltage tap bundle; each socket pin (soldering side) shall be covered by 30 mm of shrinking tube (type ATUM-3/1-0); for twisting of voltage tap wires see instrumentation list;
nc - not connected; LQ(X) & LQ(Y) - low current quadrupoles, X & Y determine which LQ sees the beam as the 1st one (X - 1st, Y - 2nd);
(MQ+MS+MO) - multipole corrector; (SH+SV) - steering magnet; DS/US - beam down stream/up stream direction;



Drawing Number	GSI-SIS100-QDM-1.Ei-002	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 2 of 8
Circuit	Steering magnet & bus-bar & voltage taps Local current leads & voltage taps Sockets: SSH, SSV		
Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	W. Freisleben (PBMT)	Date	2015-Feb-24

Comments:

(SV+SH) - steering magnet: SV - vertical coil, SH - horizontal coil; (MQ+MS+MO) - multipole corrector;
(Cu+HTS) - local current lead; TSV - terminal box for steerer vertical coil, TSH - terminal box for steerer horizontal coil;
nc - not connected; each socket shall receive its own voltage tap bundle; each socket pin (soldering side) shall be covered by 30 mm of shrinking tube (type ATUM-3/1-0); for twisting of voltage tap wires see instrumentation list; voltage tap wire: HH-2619-LH (Axon GmbH);

DS unit

US unit

Quad F1

SV

SH

Quad QD

TMS

TMO

MO

MS

MQ

TMQ

28

Beam

Center of the synchrotron

superconducting corrector cable
(LTS, insulated strands)

a b c d e f g h i j k l m n o p q r s t u v w x y z aa bb

nc nc nc nc

current direction

MQ MS MO

HTS HTS

Cu Cu

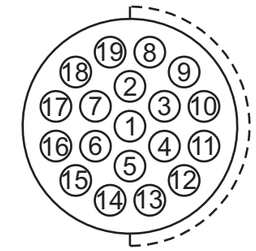
2

HTS-LTS joint

SMQ socket
1 - nc
18 - VQ08
7 - VQ17
6 - VQ18
19 - VQ07
3 - VQ15
2 - VQ16
9 - VQ05
8 - VQ06
11 - VQ03
10 - VQ04
13 - VQ01
12 - VQ02
5 - VQ13
4 - VQ14
15 - VQ11
14 - VQ12
17 - VQ09
16 - VQ10
nc

SMS socket
8 - VS06
9 - VS05
10 - VS04
11 - VS03
12 - VS02
13 - VS01
4 - VS14
5 - VS13
14 - VS12
15 - VS11
16 - VS10
17 - VS09
3 - VS15
2 - VS16
18 - VS08
7 - VS17
6 - VS18
19 - VS07
1 - nc
nc

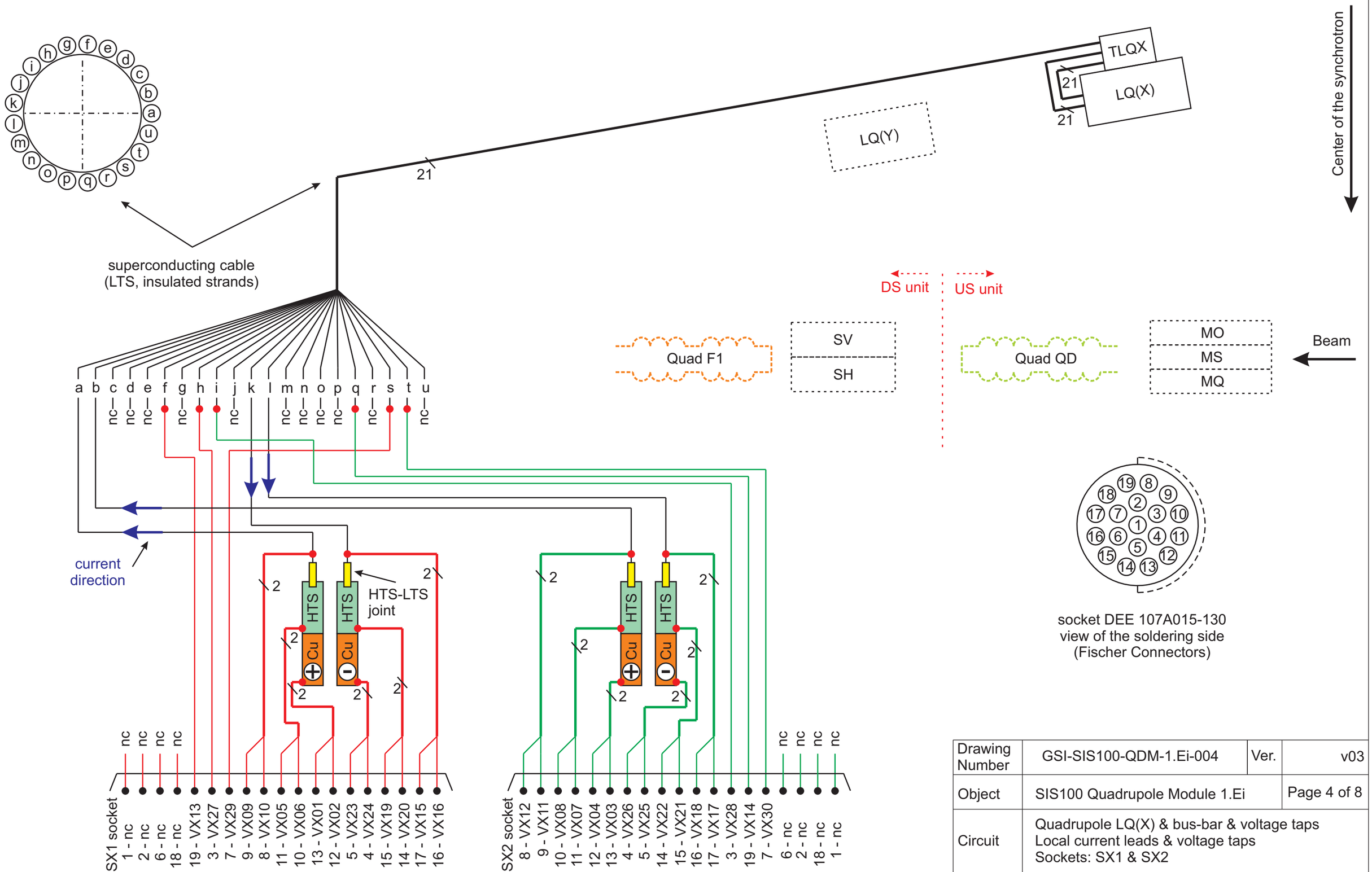
SMO socket
9 - VO05
8 - VO06
11 - VO03
10 - VO04
13 - VO01
12 - VO02
4 - VO14
5 - VO13
14 - VO12
15 - VO11
16 - VO10
17 - VO09
3 - VO15
2 - VO16
18 - VO08
7 - VO17
6 - VO18
19 - VO07
1 - nc
nc



socket DEE 107A015-130
view of the soldering side
(Fischer Connectors)

Drawing Number	GSI-SIS100-QDM-1.Ei-003	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 3 of 8
Circuit	Multipole corrector & bus-bar & voltage taps Local current leads & voltage taps Sockets: SMQ, SMS & SMO		
Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	W. Freisleben (PBMT)	Date	2015-Feb-24

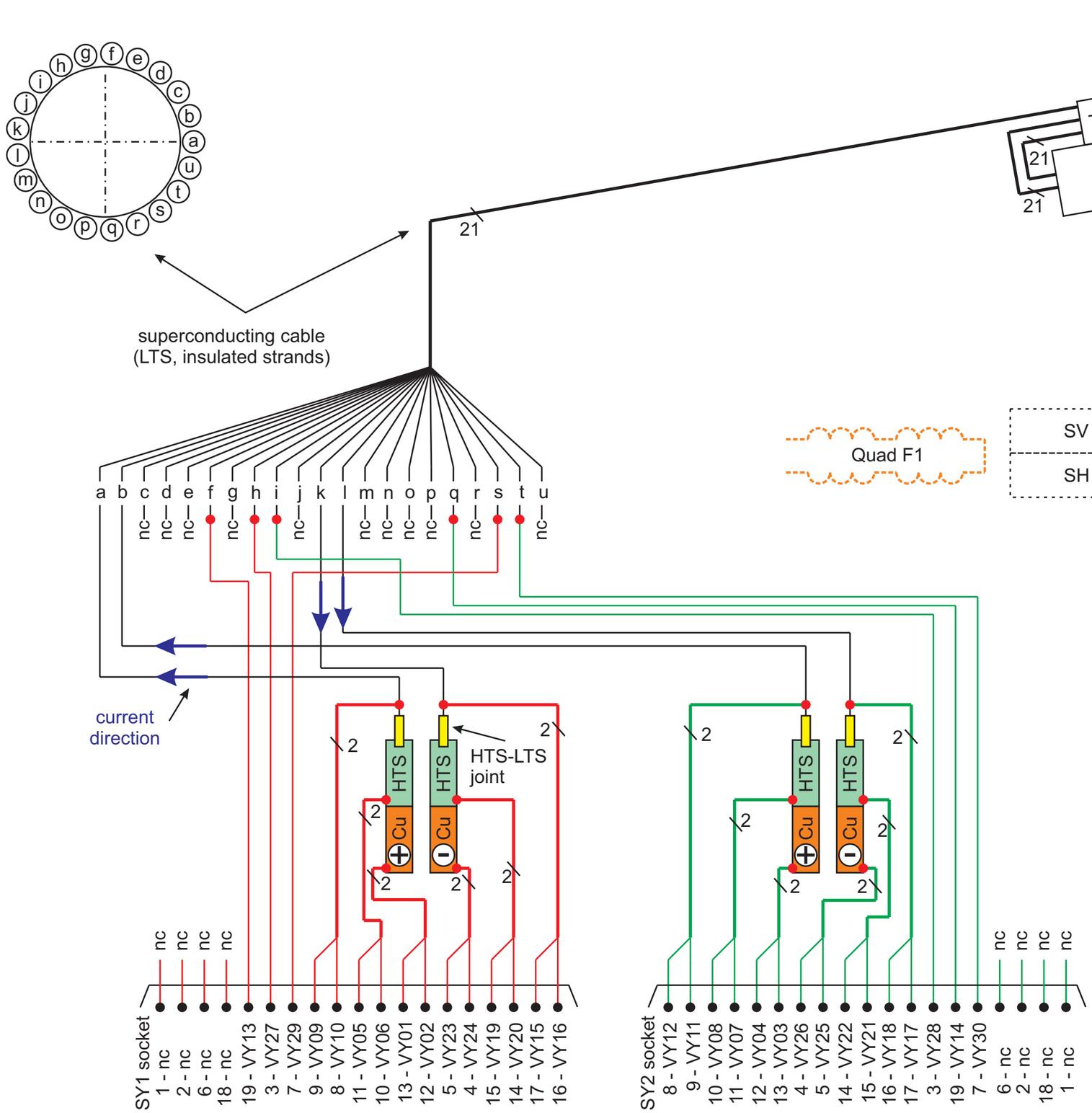
Comments: (MQ+MS+MO) - multipole corrector: quadrupole, sextupole and octupole; (Cu+HTS) - local current lead; (SH+SV) - steering magnet; TMQ - terminal box for quadrupole corrector, TMS - terminal box for sextupole corrector, TMO - terminal box for octupole corrector; nc - not connected; each socket shall receive its own voltage tap bundle; each socket pin (soldering side) shall be covered by 30 mm of shrinking tube (type ATUM-3/1-0); for twisting of voltage tap wires see instrumentation list; voltage tap wire: HH-2619-LH (Axon GmbH);

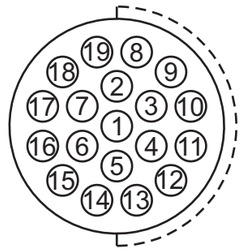


socket DEE 107A015-130
view of the soldering side
(Fischer Connectors)

Drawing Number	GSI-SIS100-QDM-1.Ei-004	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 4 of 8
Circuit	Quadrupole LQ(X) & bus-bar & voltage taps Local current leads & voltage taps Sockets: SX1 & SX2		
Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	W. Freisleben (PBMT)	Date	2015-Feb-24

Comments: (SV+SH) - steering magnet: SV - vertical coil, SH - horizontal coil; (MQ+MS+MO) - multipole corrector: quadrupole, sextupole and octupole; (Cu+HTS) - local current lead; LQ(X) & LQ(Y) - low current quadrupoles; TLQX - terminal box for low current quadrupole; nc - not connected; each socket shall receive its own voltage tap bundle; each socket pin (soldering side) shall be covered by 30 mm of shrinking tube (type ATUM-3/1-0); for twisting of voltage tap wires see instrumentation list; voltage tap wire: HH-2619-LH (Axon GmbH);





socket DEE 107A015-130
view of the soldering side
(Fischer Connectors)

Drawing Number	GSI-SIS100-QDM-1.Ei-005	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 5 of 8
Circuit	Quadrupole LQ(Y) & bus-bar & voltage taps Local current leads & voltage taps Sockets: SY1 & SY2		
Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	W. Freisleben (PBMT)	Date	2015-Feb-24

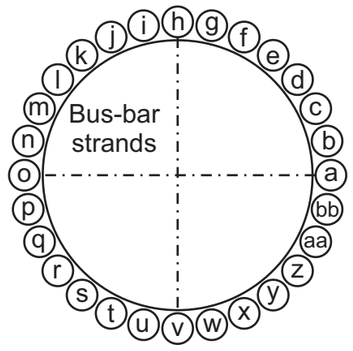
Comments: (SV+SH) - steering magnet: SV - vertical coil, SH - horizontal coil; (MQ+MS+MO) - multipole corrector: quadrupole, sextupole and octupole; (Cu+HTS) - local current lead; LQ(Y) & LQ(X) - low current quadrupoles; TLQY - terminal box for low current quadrupole; nc - not connected; each socket shall receive its own voltage tap bundle; each socket pin (soldering side) shall be covered by 30 mm of shrinking tube (type ATUM-3/1-0); for twisting of voltage tap wires see instrumentation list; voltage tap wire: HH-2619-LH (Axon GmbH);

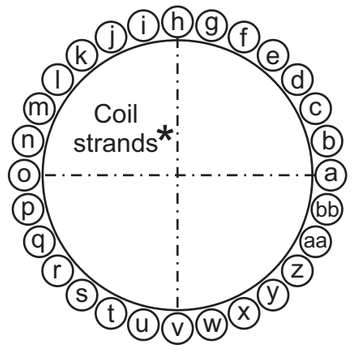
TSH

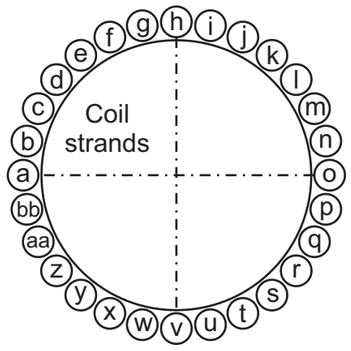
Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	a	a	-	current "+"
2	-	b	bb	
3	-	c	aa	
4	-	d	z	
5	-	e	y	
6	-	f	x	
7	-	g	w	
8	e	h	v	"middle" Vtap
9	-	i	u	
10	-	j	t	
11	-	k	s	
12	-	l	r	
13	-	m	q	
14	-	n	p	
15	b-c	-	o	MID "+" (x2)
16	p-q	o	-	MID "-" (x2)
17	o	-	n	current "-"
18	-	p	m	
19	-	q	l	
20	-	r	k	
21	-	s	j	
22	-	t	i	
23	-	u	h	
24	s	v	g	"middle" Vtap
25	-	w	f	
26	-	x	e	
27	-	y	d	
28	-	z	c	
29	-	aa	b	
30	-	bb	a	

TSV

Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	h	a	-	current "+"
2	-	b	bb	
3	-	c	aa	
4	-	d	z	
5	-	e	y	
6	-	f	x	
7	-	g	w	
8	l	h	v	"middle" Vtap
9	-	i	u	
10	-	j	t	
11	-	k	s	
12	-	l	r	
13	-	m	q	
14	-	n	p	
15	i-j	-	o	MID "+" (x2)
16	w-x	o	-	MID "-" (x2)
17	v	-	n	current "-"
18	-	p	m	
19	-	q	l	
20	-	r	k	
21	-	s	j	
22	-	t	i	
23	-	u	h	
24	z	v	g	"middle" Vtap
25	-	w	f	
26	-	x	e	
27	-	y	d	
28	-	z	c	
29	-	aa	b	
30	-	bb	a	







Drawing Number	GSI-SIS100-QDM-1.Ei-006	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 6 of 8
Circuit	Connections in terminal boxes: TSH, TSV		

Comments: (SV+SH) - steering magnet: SV - vertical coil, SH - horizontal coil;
TSV - terminal box for steerer vertical coil, TSH - terminal box for steerer horizontal coil;
for detail information (i.e. solder number) see technical drawing of the terminal box: MG-1009693-A-V01;

Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	K. Sugita (PBMT)	Date	2015-Feb-24

1	2	3	4	5	6	7	8	9	10

TMQ

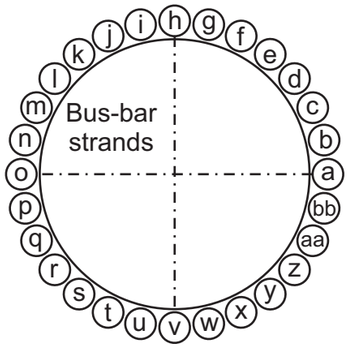
Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	a	a	-	current "+"
2	-	-	-	
3	-	c	aa	
4	-	-	-	
5	-	e	y	
6	-	-	-	
7	b	g	w	"middle" Vtap
8	-	-	-	
9	-	i	u	
10	-	-	-	
11	-	k	s	
12	-	-	-	
13	-	m	q	
14	-	-	-	
15	aa-bb	-	o	MID "+" (x2)
16	m-n	o	-	MID "-" (x2)
17	o	-	m	current "-"
18	-	-	-	
19	-	q	k	
20	-	-	-	
21	-	s	i	
22	-	-	-	
23	p	u	g	"middle" Vtap
24	-	-	-	
25	-	w	e	
26	-	-	-	
27	-	y	c	
28	-	-	-	
29	-	aa	a	
30	-	-	-	

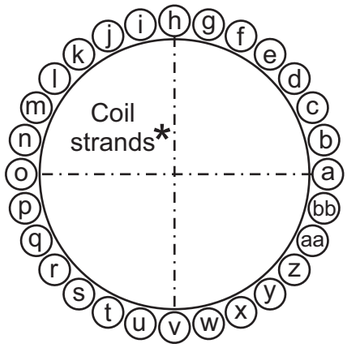
TMS

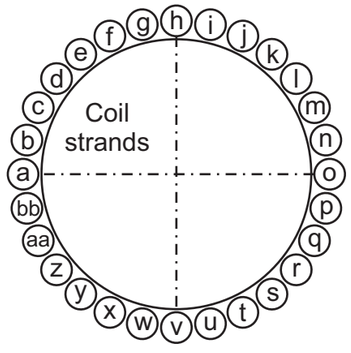
Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	f	a	-	current "+"
2	-	b	bb	
3	-	c	aa	
4	-	d	z	
5	-	e	y	
6	-	f	x	
7	-	g	w	
8	g	h	v	"middle" Vtap
9	-	i	u	
10	-	j	t	
11	-	k	s	
12	-	l	r	
13	-	m	q	
14	-	n	p	
15	d-e	-	o	MID "+" (x2)
16	r-s	o	-	MID "-" (x2)
17	t	-	n	current "-"
18	-	p	m	
19	-	q	l	
20	-	r	k	
21	-	s	j	
22	-	t	i	
23	-	u	h	
24	u	v	g	"middle" Vtap
25	-	w	f	
26	-	x	e	
27	-	y	d	
28	-	z	c	
29	-	aa	b	
30	-	bb	a	

TMO

Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	j	a	-	current "+"
2	-	b	y	
3	-	c	x	
4	-	d	w	
5	-	e	v	
6	-	f	u	
7	k	g	t	"middle" Vtap
8	-	h	s	
9	-	i	r	
10	-	j	q	
11	-	k	p	
12	-	l	n	
13	x	-	m	current "-"
14	-	m	l	
15	h-i	-	o	MID "+" (x2)
16	v-w	o	-	MID "-" (x2)
17	-	n	k	
18	-	p	j	
19	-	q	i	
20	-	r	h	
21	y	s	g	"middle" Vtap
22	-	t	f	
23	-	u	e	
24	-	v	d	
25	-	w	c	
26	-	x	b	
27	-	y	a	
28	-	-	-	
29	-	-	-	
30	-	-	-	







Drawing Number	GSI-SIS100-QDM-1.Ei-007	Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei		Page 7 of 8
Circuit	Connections in terminal boxes: TMQ, TMS & TMO		

Comments: (MQ+MS+MO) - multipole corrector: quadrupole, sextupole and octupole;
TMQ - terminal box for quadrupole corrector, TMS - terminal box for sextupole corrector, TMO - terminal box for octupole corrector;
for detail information (i.e. solder number) see technical drawing of the terminal box: MG-1009693-A-V01;

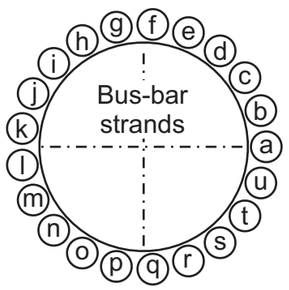
Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	K. Sugita (PBMT)	Date	2015-Feb-24

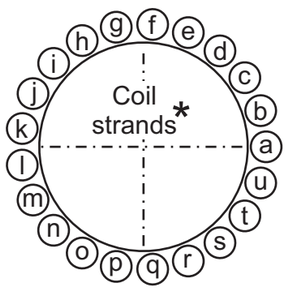
TLQX

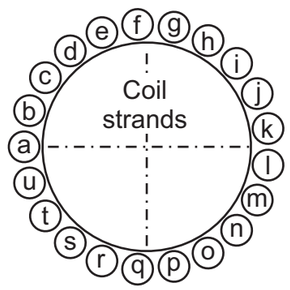
Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	a-b	a	-	current "+"
2	-	b	u	
3	-	c	t	
4	-	d	s	
5	-	e	r	
6	f	f	q	"middle" Vtap
7	-	g	p	
8	-	h	o	
9	-	i	n	
10	-	j	m	
11	k-l	-	l	current "-"
12	s-t	k	-	MID "-" (x2)
13	h-i	-	k	MID "+" (x2)
14	-	l	j	
15	-	m	i	
16	-	n	h	
17	-	o	g	
18	q	p	f	"middle" Vtap
19	-	q	e	
20	-	r	d	
21	-	s	c	
22	-	t	b	
23	-	u	a	

TLQY

Solder number	Bus-bar strand	Coil strand* (current input)	Coil strand (current output)	Comments
1	a-b	a	-	current "+"
2	-	b	u	
3	-	c	t	
4	-	d	s	
5	-	e	r	
6	f	f	q	"middle" Vtap
7	-	g	p	
8	-	h	o	
9	-	i	n	
10	-	j	m	
11	k-l	-	l	current "-"
12	s-t	k	-	MID "-" (x2)
13	h-i	-	k	MID "+" (x2)
14	-	l	j	
15	-	m	i	
16	-	n	h	
17	-	o	g	
18	q	p	f	"middle" Vtap
19	-	q	e	
20	-	r	d	
21	-	s	c	
22	-	t	b	
23	-	u	a	







Drawing Number	GSI-SIS100-QDM-1.Ei-008
Ver.	v03
Object	SIS100 Quadrupole Module 1.Ei
Page 8 of 8	
Circuit	Connections in terminal boxes: TLQX & TLQY

Comments: LQ(X) & LQ(Y) - low current quadrupoles, X & Y determine which LQ sees the beam as the 1st one (X - 1st, Y - 2nd);
TLQX - terminal box for low current quadrupole X, TLQY - terminal box for low current quadrupole Y;

Author	P. Szwangruber (PBMT)	Date	2015-Feb-24
Revised	K. Sugita (PBMT)	Date	2015-Feb-24