

UNIVERSITY OF CHICAGO
ELECTRONICS DEVELOPMENT GROUP

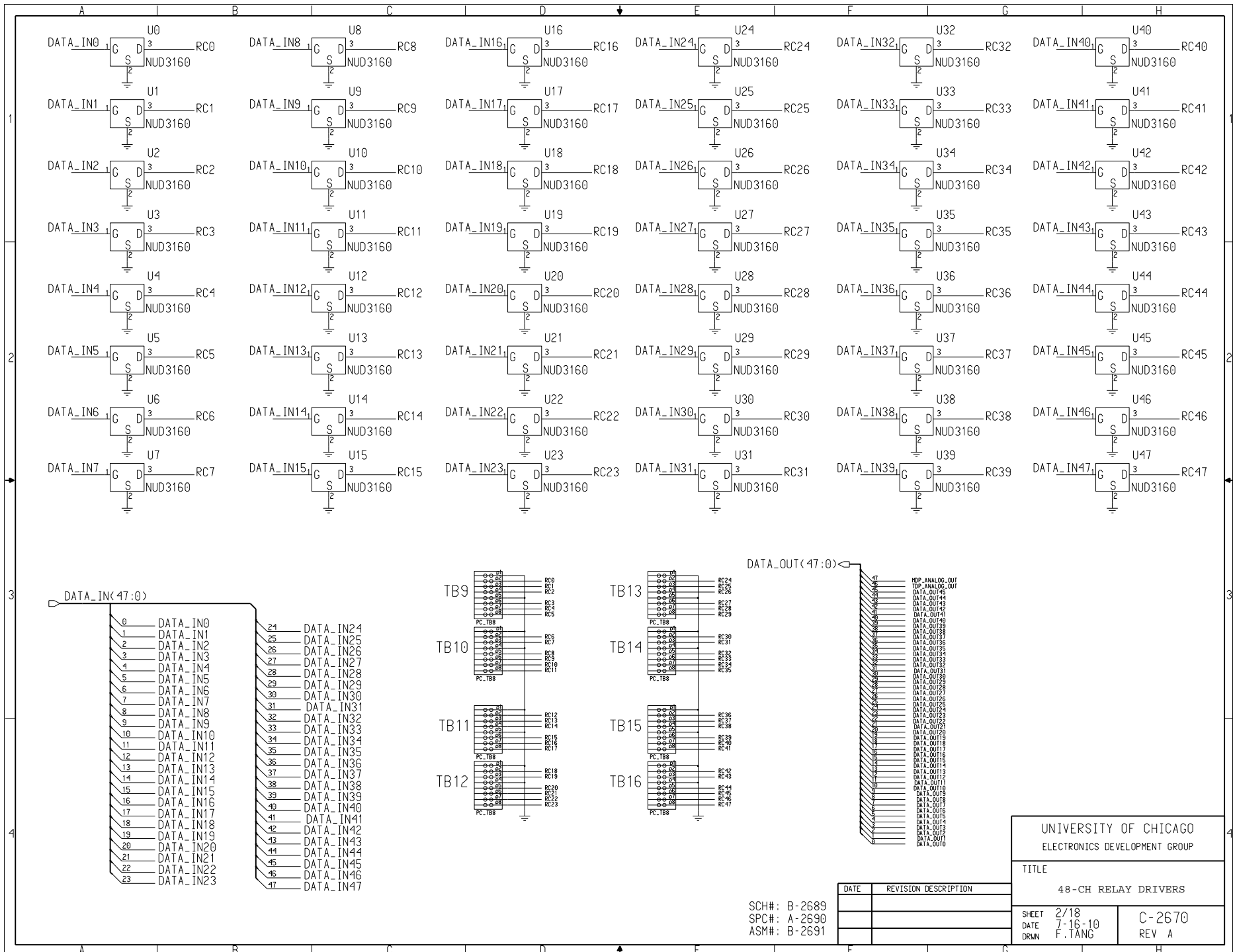
TITLE
CHILI VACUUM CONTROL UNIT

SHEET 1/18
DATE 7-16-10
DRWN F. TANG

C-2670
REV A

SCH#: B-2689
SPC#: A-2630
ASM#: B-2691

DATE	REVISION DESCRIPTION



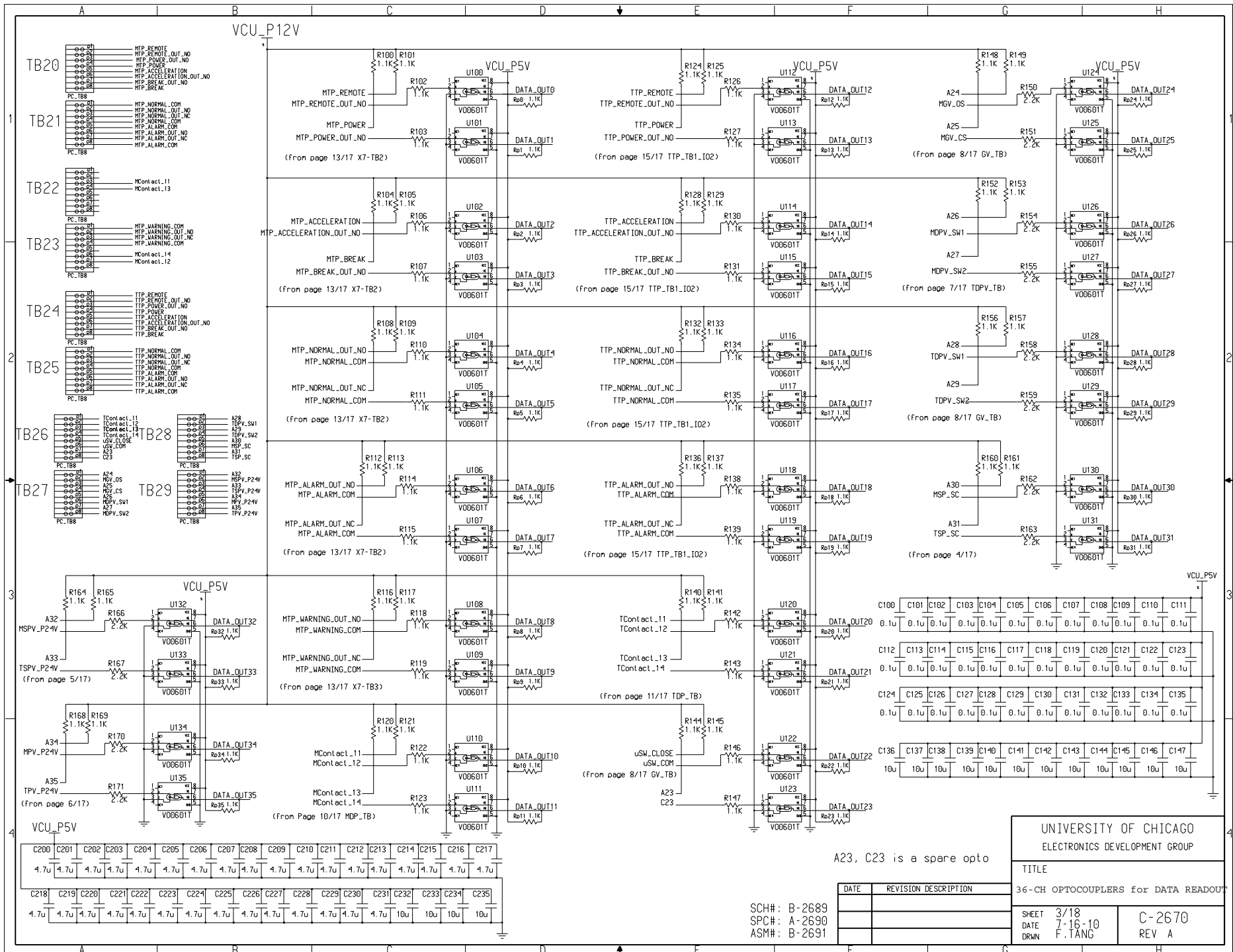
UNIVERSITY OF CHICAGO
ELECTRONICS DEVELOPMENT GROUP

TITLE
48-CH RELAY DRIVERS

DATE	REVISION DESCRIPTION

SHEET 2/18	C-2670
DATE 7-16-10	REV A
DRWN F. TANG	

SCH#: B-2689
SPC#: A-2690
ASM#: B-2691



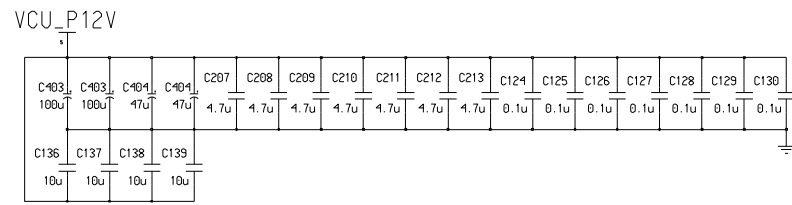
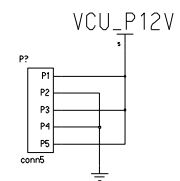
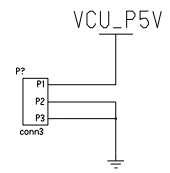
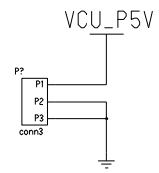
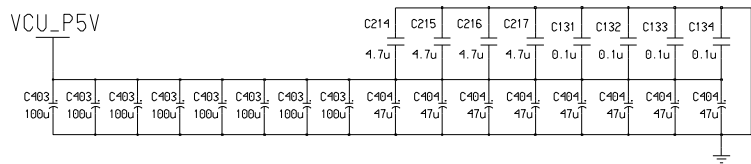
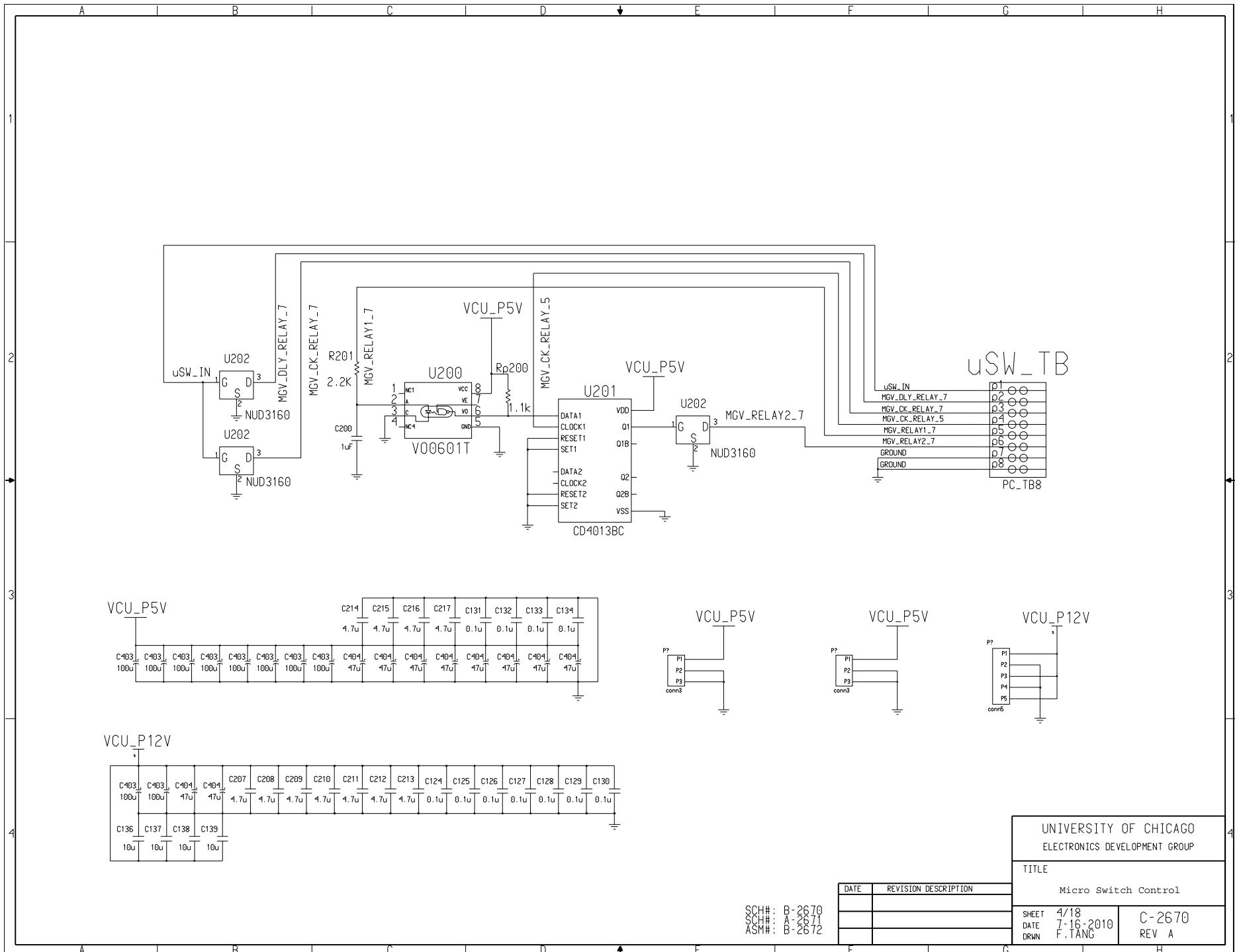
A23, C23 is a spare opto

SCH#: B-2689
 SPC#: A-2690
 ASM#: B-2691

DATE	REVISION	DESCRIPTION

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE 36-CH OPTOCOUPERS for DATA READOUT	
SHEET DATE DRWN	3/18 7-16-10 F. TANG
C-2670	REV A

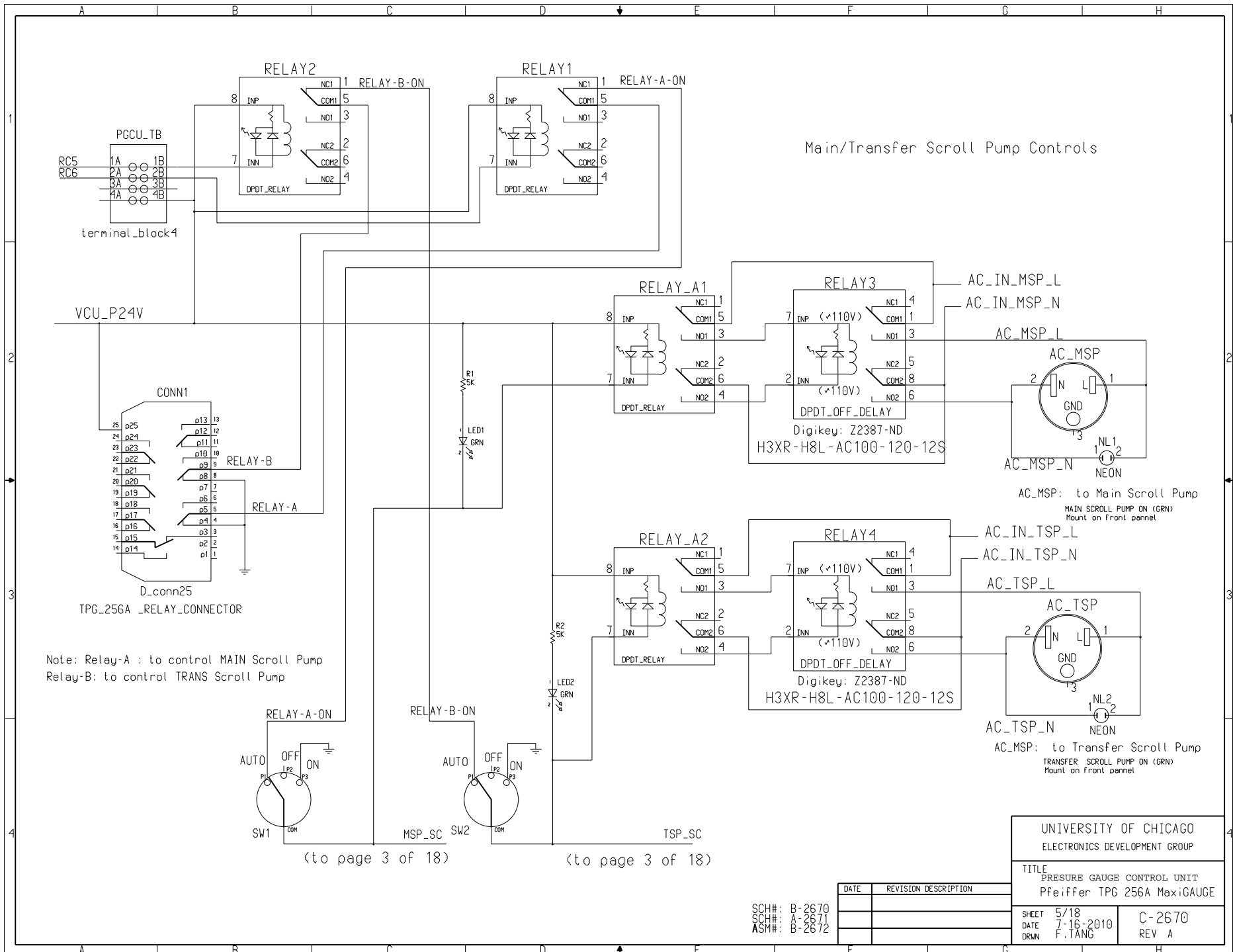
C200	C201	C202	C203	C204	C205	C206	C207	C208	C209	C210	C211	C212	C213	C214	C215	C216	C217
4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u
C218	C219	C220	C221	C222	C223	C224	C225	C226	C227	C228	C229	C230	C231	C232	C233	C234	C235
4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	4.7u	10u	10u	10u	10u	10u



UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE Micro Switch Control	
SHEET 4/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

SCH#: B-2670
SCH#: A-2671
ASM#: B-2672

DATE	REVISION DESCRIPTION



Note: Relay-A : to control MAIN Scroll Pump
 Relay-B: to control TRANS Scroll Pump

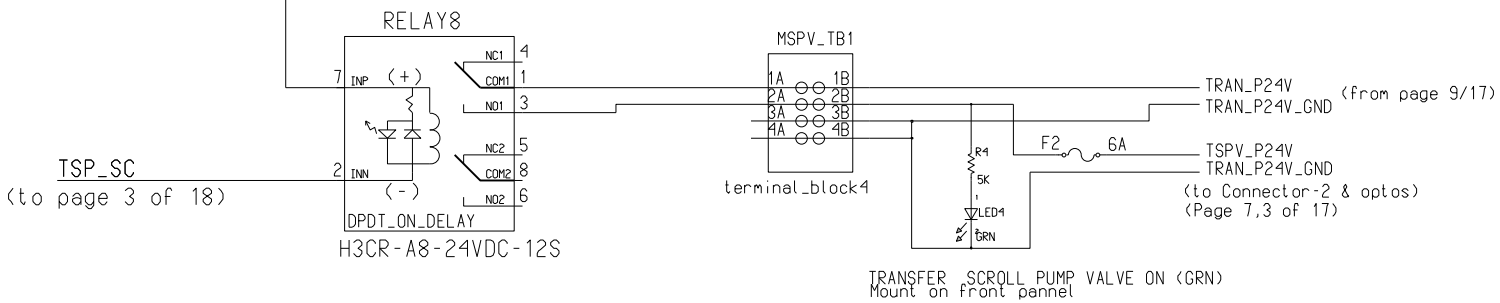
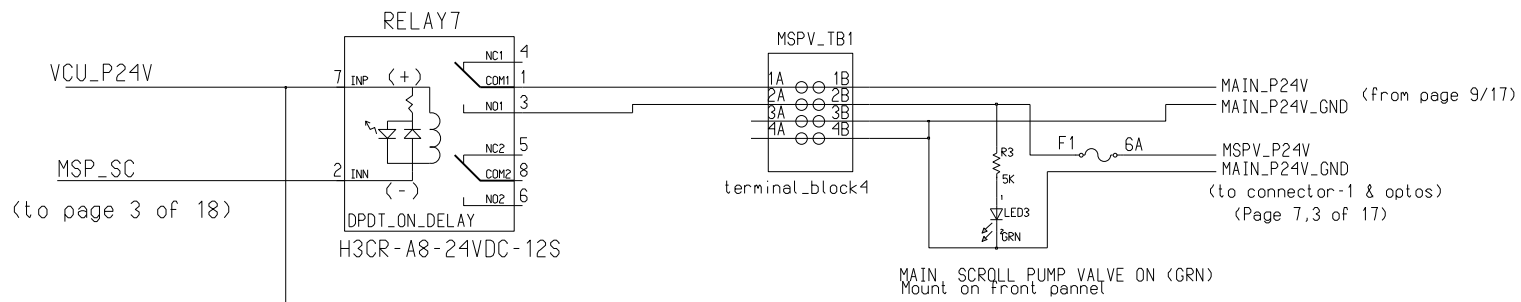
(to page 3 of 18)

(to page 3 of 18)

SCH#: B-2670
 SCH#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE PRESSURE GAUGE CONTROL UNIT Pfeiffer TPG 256A MaxiGAUGE	
SHEET DATE DRAWN	5/18 7-16-2010 F. TANG
C-2670 REV A	



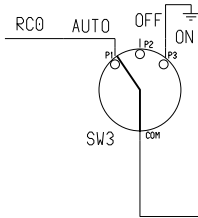
Main/Transfer Scroll Pump Valve Controls

SCH#: B-2670
 SPCH: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

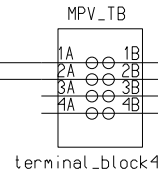
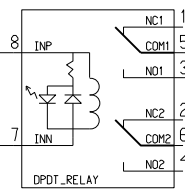
UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE PRESSURE GAUGE CONTROL UNIT Pfeiffer TPG 256A MaxiGAUGE	
SHEET 6/18 DATE 7-16-2010 DRWN F. TANG	C-2670 REV A

MAIN PURGE PUMP VALVE SWITCH



VCU_P24V

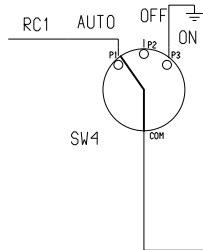
MAIN_PV_RELAY



MAIN PURGE PUMP VALVE ON (GRN)
Mount on front panel

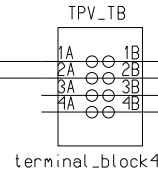
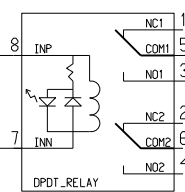
MAIN_P24V (from page 9/18)
MAIN_P24V_GND
MPV_P24V
MAIN_P24V_GND
(to connector-1 & optos)
(Page 7,3 of 18)

TRANSFER PURGE PUMP VALVE SWITCH



VCU_P24V

TRANS_PV_RELAY



TRANSFER PURGE PUMP VALVE ON (GRN)
Mount on front panel

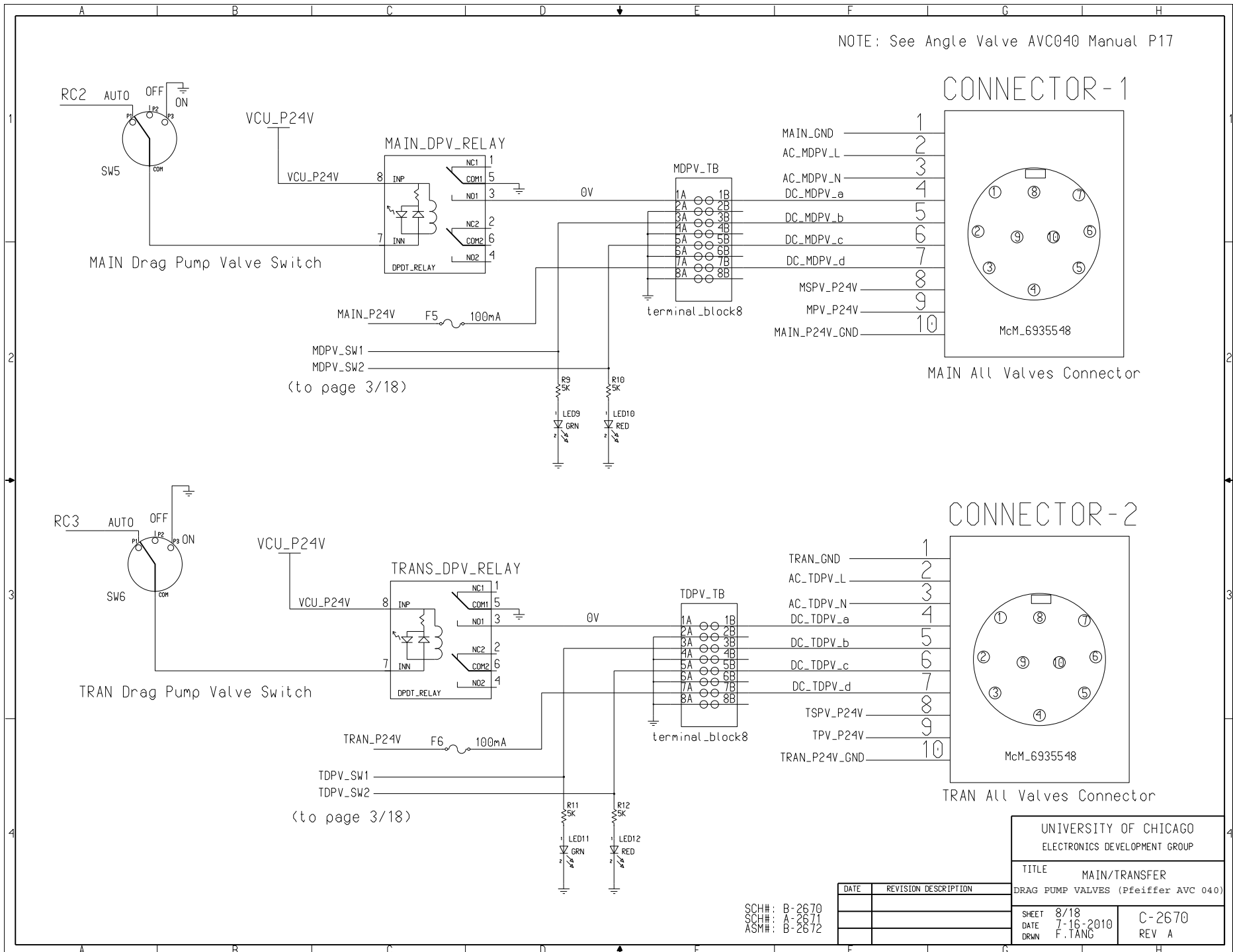
TRAN_P24V (from page 9/18)
TRAN_P24V_GND
TPV_P24V
TRAN_P24V_GND
(to Connector-2 & optos)
(Page 7,3 of 18)

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN/TRANSFER PURGE VALVES (LCPV25EKA) CONTROLS	
SHEET 7/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

SCH#: B-2670
SCH#: A-2671
ASM#: B-2672

DATE	REVISION DESCRIPTION

NOTE: See Angle Valve AVC040 Manual P17

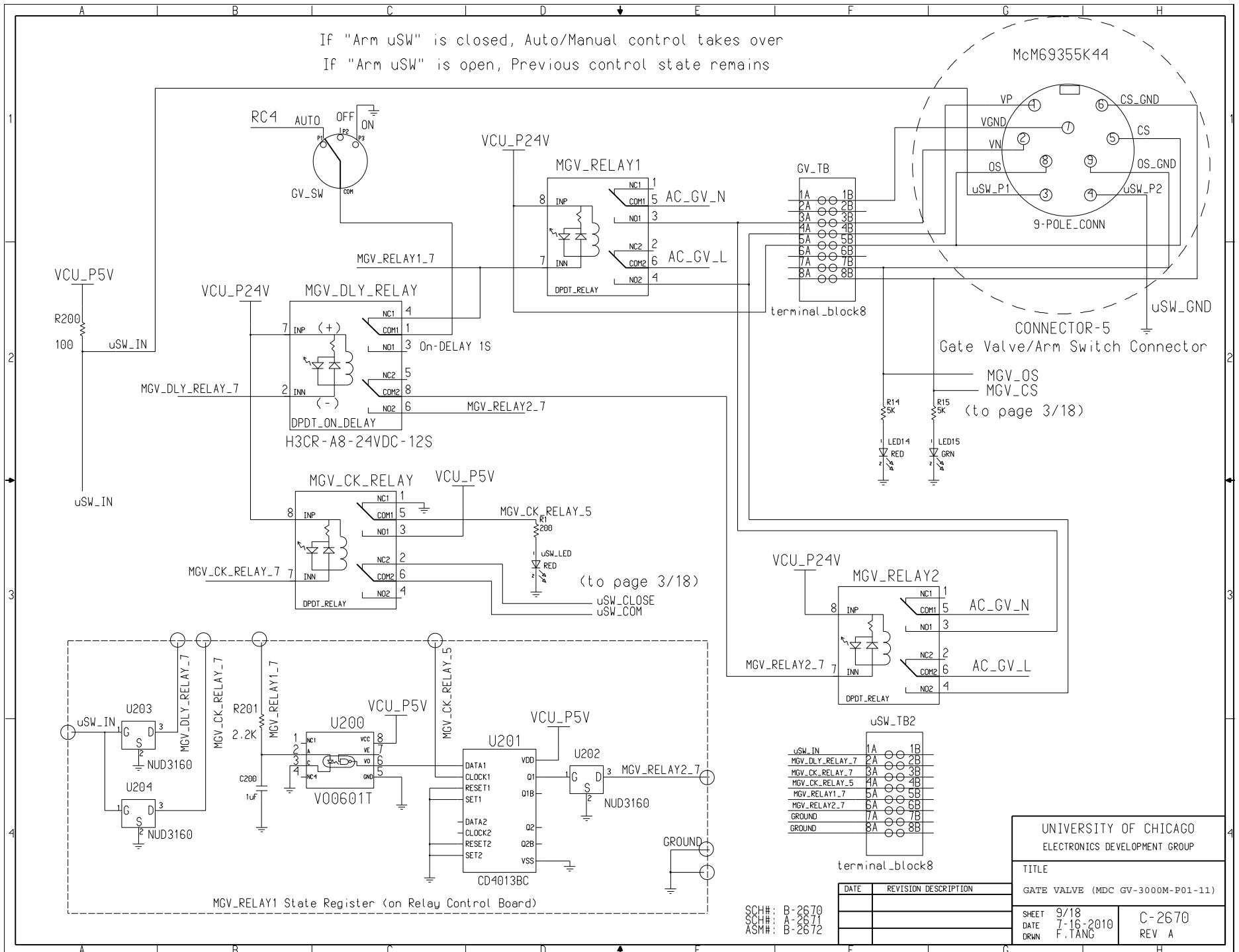


SCH#: B-2670
 SCH#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN/TRANSFER DRAG PUMP VALVES (Pfeiffer AVC 040)	
SHEET 8/18	C-2670
DATE 7-16-2010	REV A
DRWN F.TANG	

If "Arm uSW" is closed, Auto/Manual control takes over
 If "Arm uSW" is open, Previous control state remains



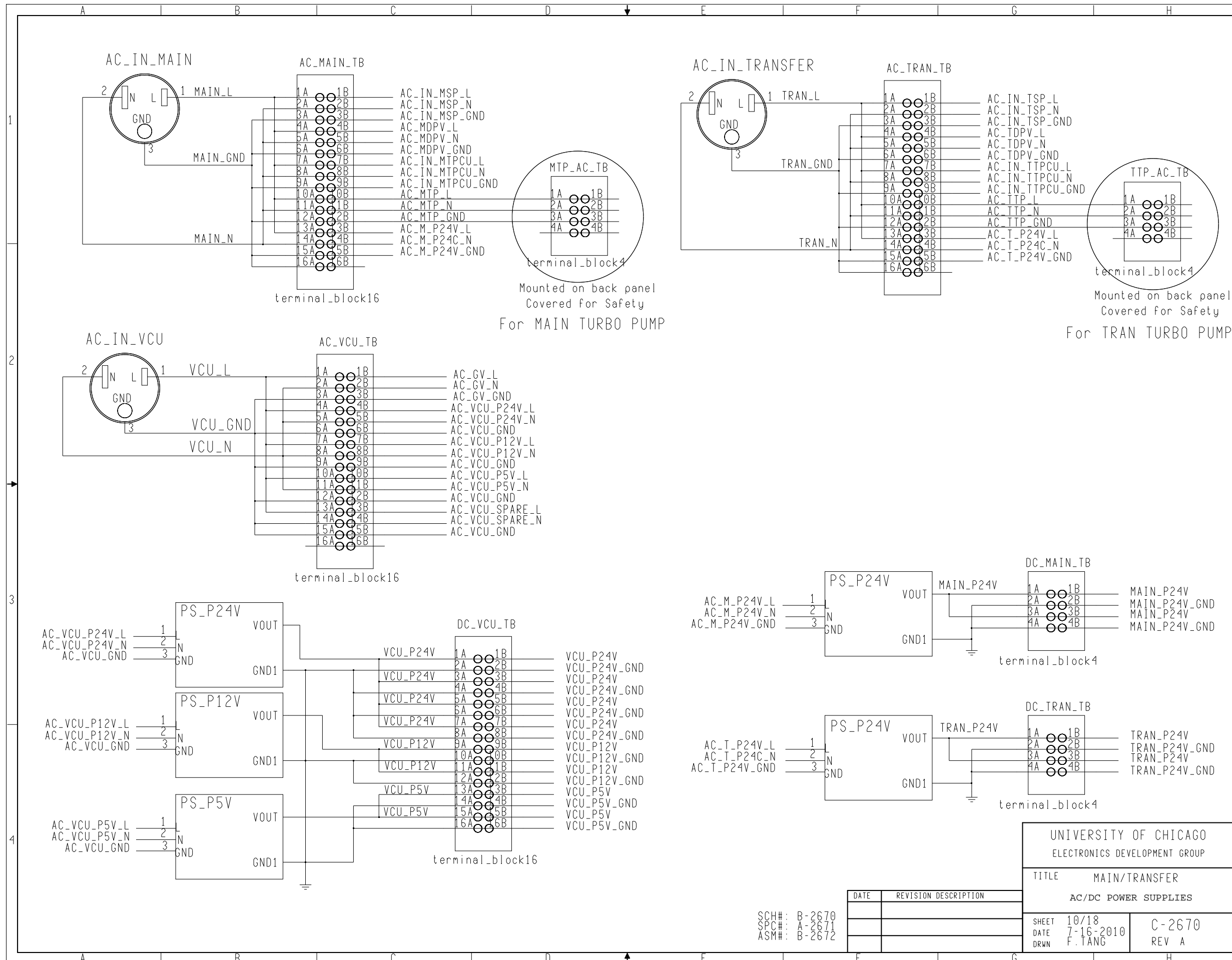
UNIVERSITY OF CHICAGO
 ELECTRONICS DEVELOPMENT GROUP

TITLE
 GATE VALVE (MDC GV-3000M-P01-11)

SHEET	9/18	C-2670
DATE	7-16-2010	
DRWN	F. TANG	
REV	A	

SCH#: B-2670
 SCH#: A-2671
 ASM#: B-2672

DATE	REVISION	DESCRIPTION



UNIVERSITY OF CHICAGO
ELECTRONICS DEVELOPMENT GROUP

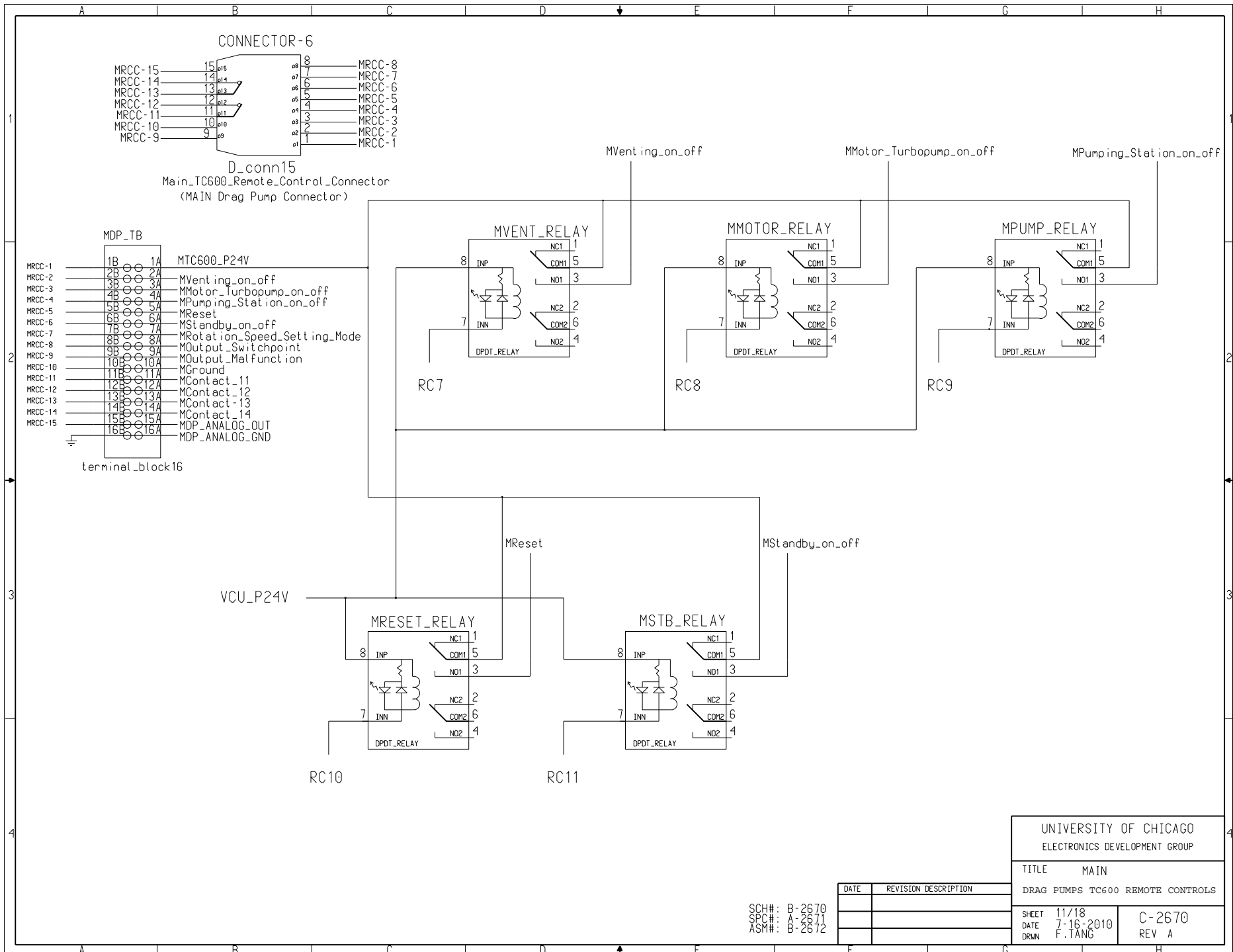
TITLE MAIN/TRANSFER
AC/DC POWER SUPPLIES

SHEET 10/18
DATE 7-16-2010
DRWN F. TANG

C-2670
REV A

SCH#: B-2670
SPC#: A-2671
ASM#: B-2672

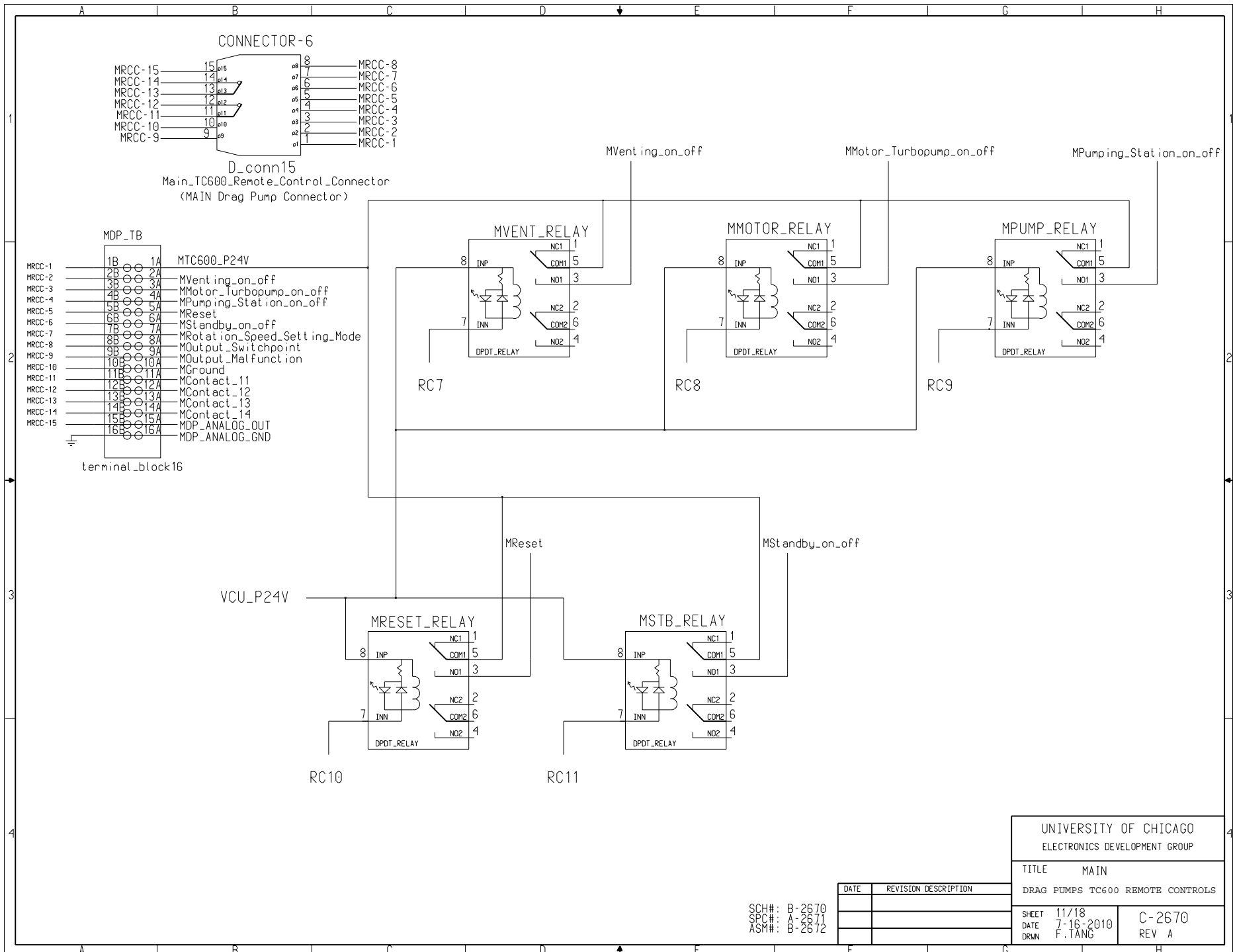
DATE	REVISION DESCRIPTION



UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN	
DRAG PUMPS TC600 REMOTE CONTROLS	
SHEET 11/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

SCH#: B-2670
 SPC#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

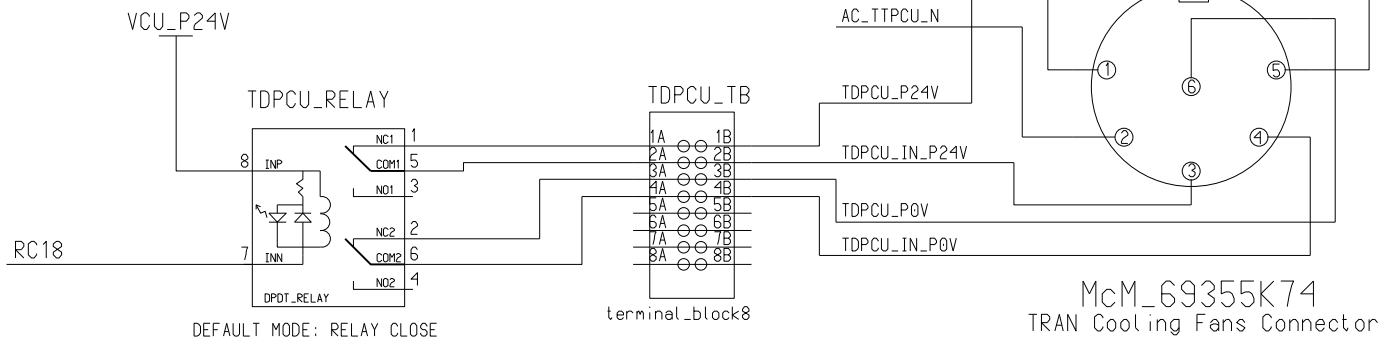
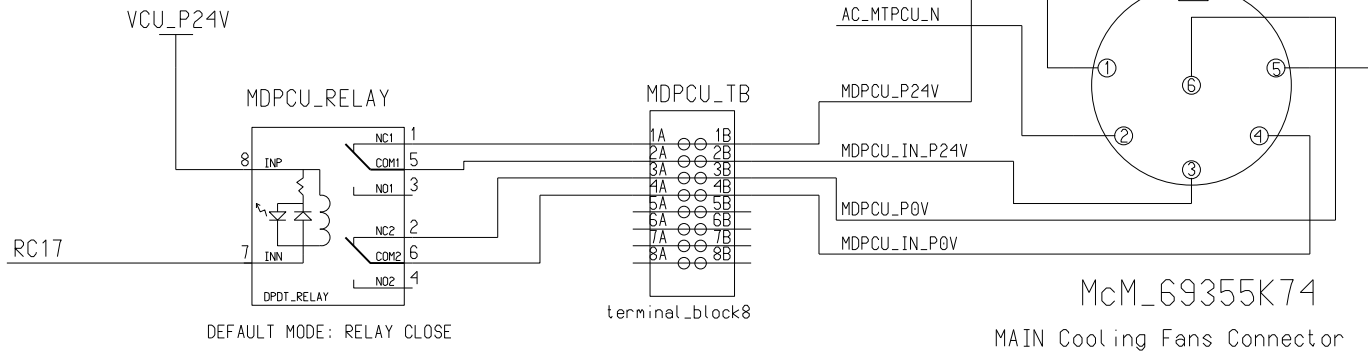


UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN	
DRAG PUMPS TC600 REMOTE CONTROLS	
SHEET 11/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

SCH#: B-2670
 SPC#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

MDPCU: Main Drag Pump Cooling Unit
 TDPCU: Transfer Drag Pump Cooling Unit



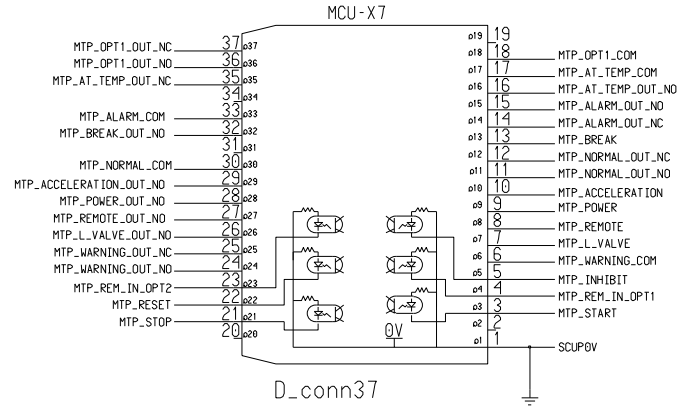
HOT: RED
 NEUT: WHITE
 GND: GREEN

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN/TRANSFER	
DRAG PUMP COOLING UNITS CONTROLS	
SHEET 13/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

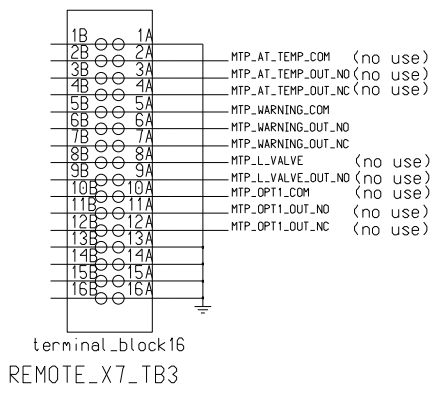
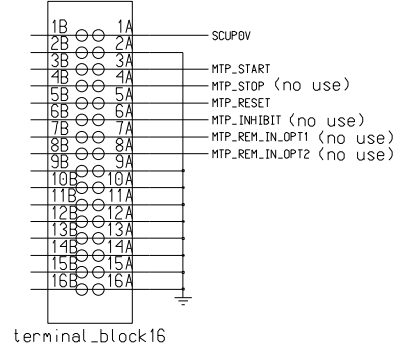
SCH#: B-2670
 SPC#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

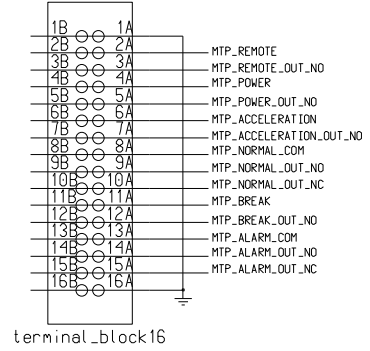
SCU-XL800 Remote Connector (X7)
(MAIN TURBO PUMP CONNECTOR)



REMOTE_X7_TB1



REMOTE_X7_TB2



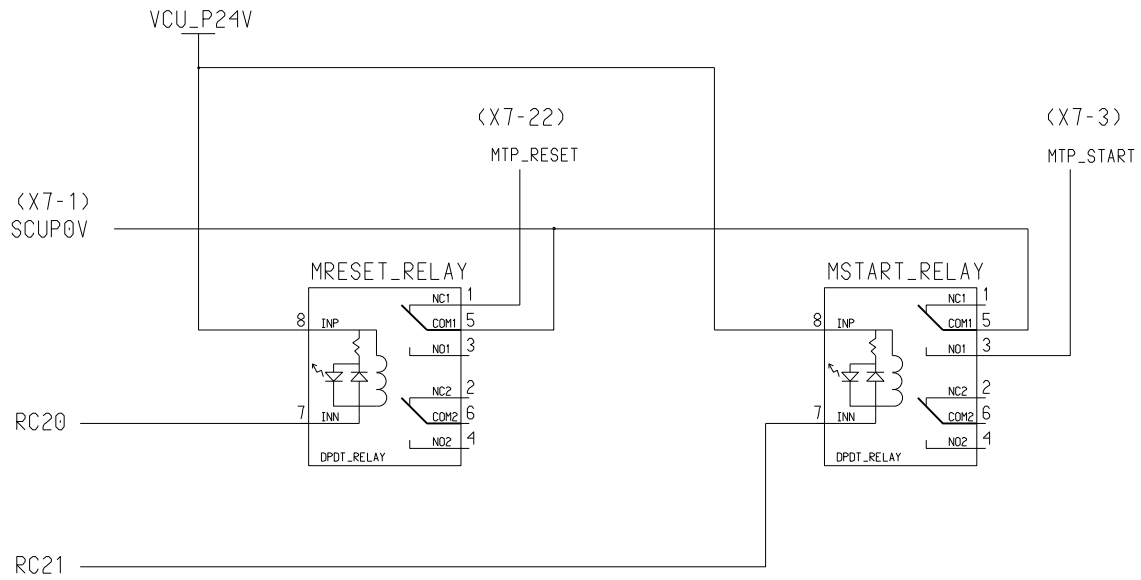
SEE PAGE 3/18 for DATA READOUT

Note: Don't wire the no use signals

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN TURBO PUMP (STP1003) CONTROL-1	
SHEET 14/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

SCH#: B-2670
SPC#: A-2671
ASM#: B-2672

DATE	REVISION DESCRIPTION



CONTROLLED BY REMOTE CONNECTOR X7

UNIVERSITY OF CHICAGO
 ELECTRONICS DEVELOPMENT GROUP

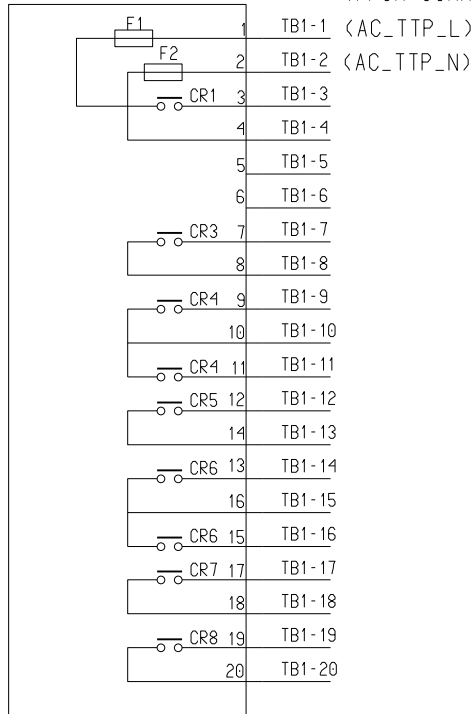
TITLE MAIN TURBO PUMP (STP1003)
 CONTROL-2

SHEET 15/18	C-2670
DATE 7-16-2010	REV A
DRWN F. TANG	

SCH#: B-2670
 SPC#: A-2671
 ASM#: B-2672

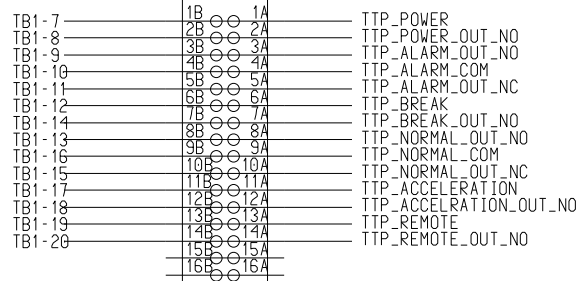
DATE	REVISION DESCRIPTION

STP-L301-TB1 (from Connector-4)



TB1

TTP_TB

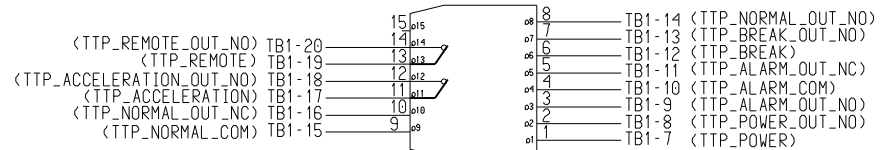


terminal_block16

SEE sheet 3/18 for data readout

(Back_panel)

STP_L301-D-SUB15



D_conn15

TRAN STP L301 Turbo Pump TB-1 Connector

UNIVERSITY OF CHICAGO
 ELECTRONICS DEVELOPMENT GROUP

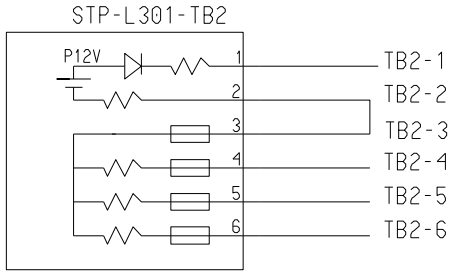
TITLE TRANSFER TURBO PUMP
 (STP-L301)
 TB1 CONTROL

SHEET 16/18
 DATE 7-16-2010
 DRWN F. TANG

C-2670
 REV A

SCH#: B-2670
 SPC#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION



VCU_P24V

(TB2-1)
TB2-1_P12V

(TB2-6)
TTP_RESET

(TB2-5)
TTP_START

TRESET_RELAY

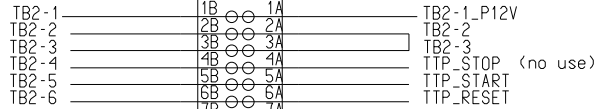
TSTART_RELAY

RC22

RC23

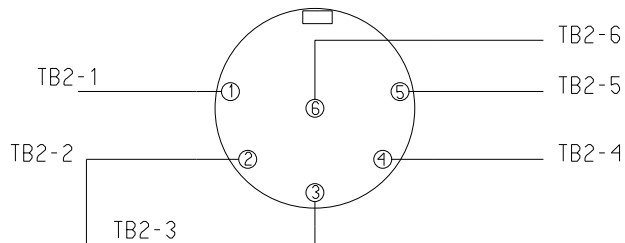
CASE-2 CONTROL LOGIC THRU TB2 CONNECTOR

TTP_IO_TB2



terminal_block16

TB2 (Back_panel)



McM_69355K74

TRAN STP L301 Turbo Pump TB-2 Connector

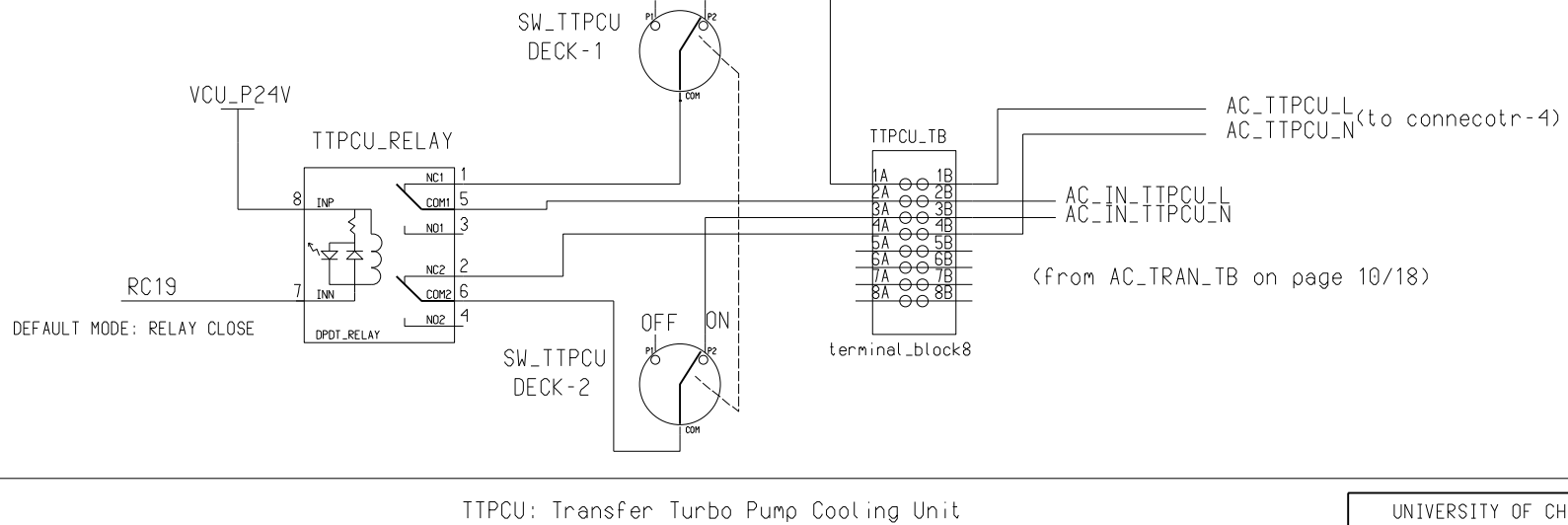
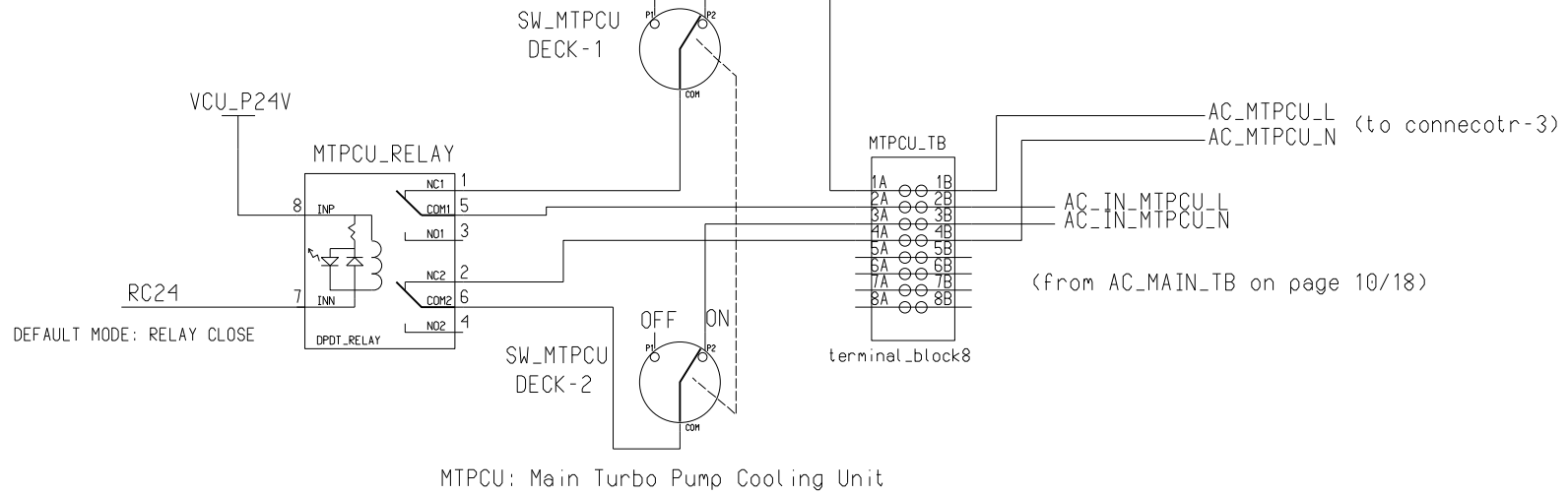
Note: don't wire no use signals

UNIVERSITY OF CHICAGO
ELECTRONICS DEVELOPMENT GROUP
TITLE TRANSFER TURBO PUMP
(STP-L301)
CONTROL-2

SCH#: B-2670
SPC#: A-2671
ASM#: B-2672

DATE	REVISION DESCRIPTION

SHEET 17/18
DATE 7-16-2010
DRWN F. TANG
C-2670
REV A

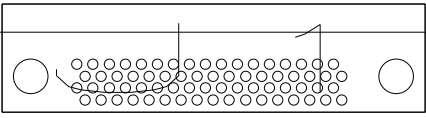
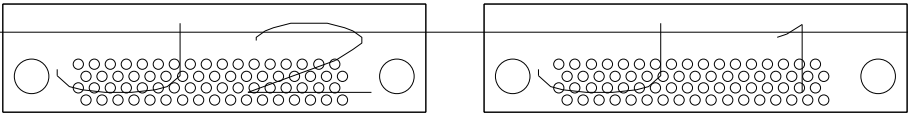


HOT: RED
 NEUT: WHITE
 GND: GREEN

SCH#: B-2670
 SPC#: A-2671
 ASM#: B-2672

DATE	REVISION DESCRIPTION

UNIVERSITY OF CHICAGO ELECTRONICS DEVELOPMENT GROUP	
TITLE MAIN/TRANSFER TURBO PUMP COOLING UNITS CONTROLS	
SHEET 18/18 DATE 7-16-2010 DRWN F. TANG	C-2670 REV A



ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା

ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା

C 4 C136

ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା

C 3 C141

U0	U6	U12	U18	U24	U30	U36	U42	U205
U1	U7	U13	U19	U25	U31	U37	U43	U204
U2	U8	U14	U20	U26	U32	U38	U44	U207
U3	U9	U15	U21	U27	U33	U39	U45	
U4	U10	U16	U22	U28	U34	U40	U46	
U5	U11	U17	U23	U29	U35	U41	U47	

C38
C39
C138
PMP5V

ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା

ଫିକ୍ସେଡ଼ା ଫିକ୍ସେଡ଼ା

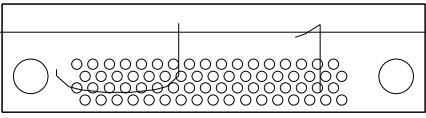
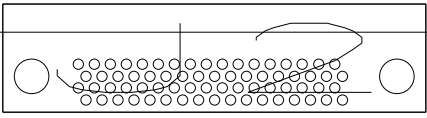
C 8 C147

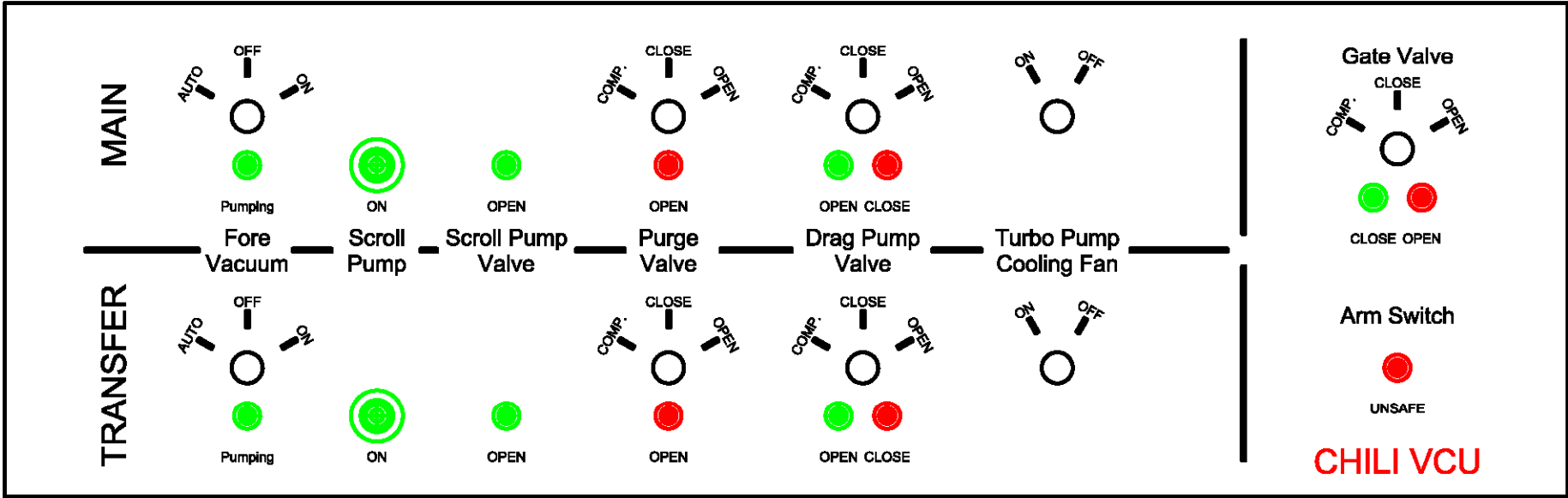
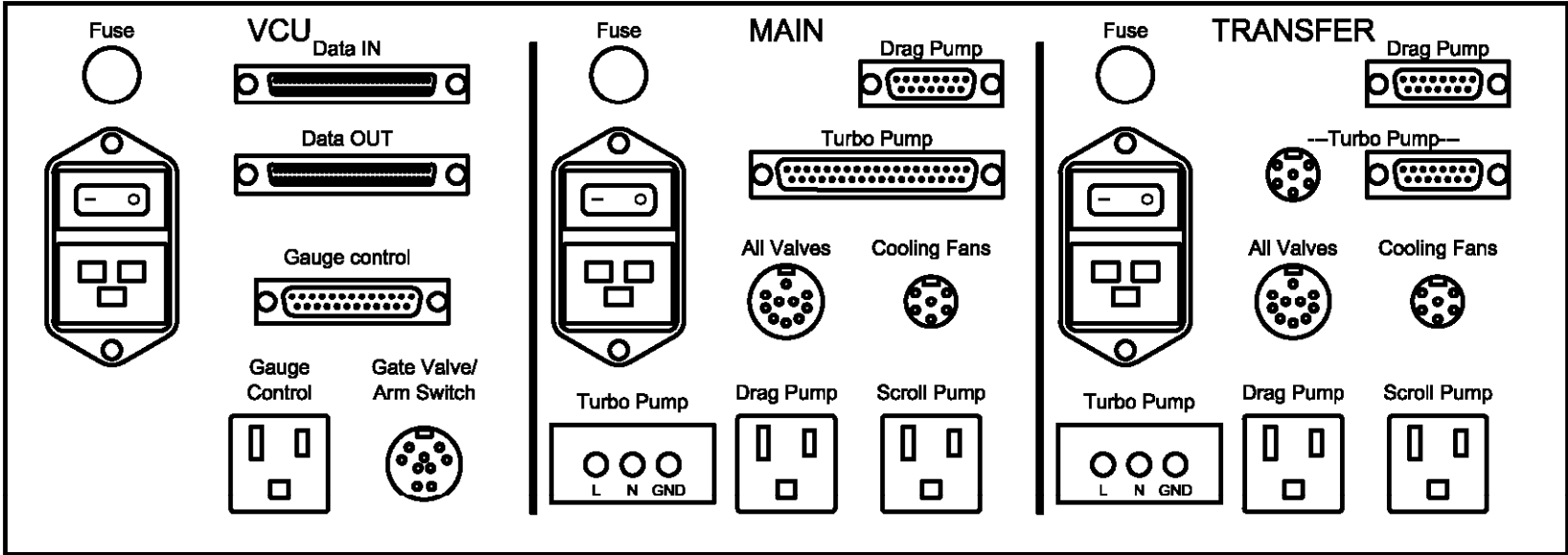
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C 7 C18 C45

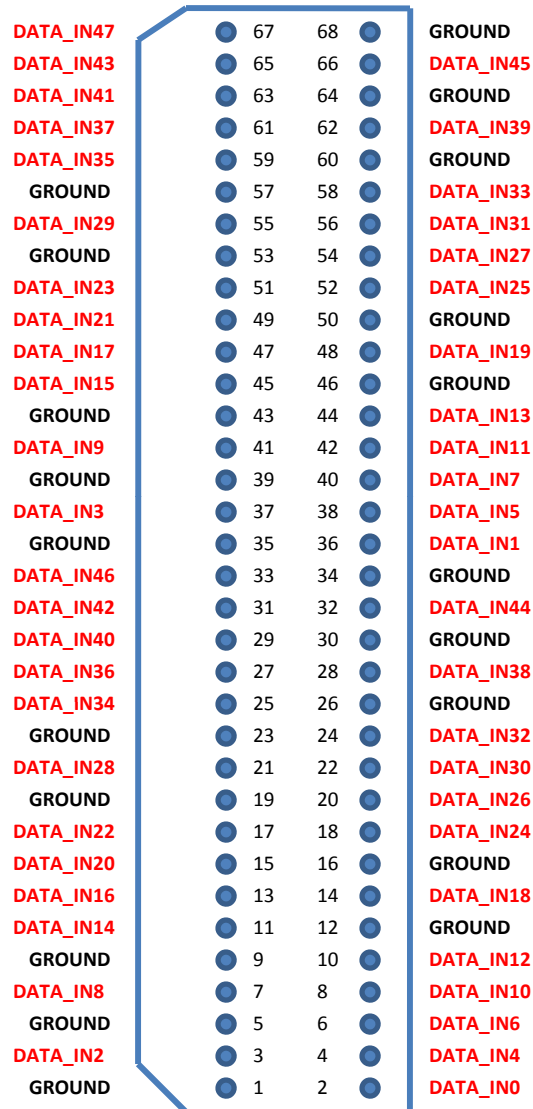
U100	U106	U112	U118	U124	U130
U101	U107	U113	U119	U125	U131
U102	U108	U114	U120	U126	U132
U103	U109	U115	U121	U127	U133
U104	U110	U116	U122	U128	U134
U105	U111	U117	U123	U129	U135

C17
C6
C44
PMP5V



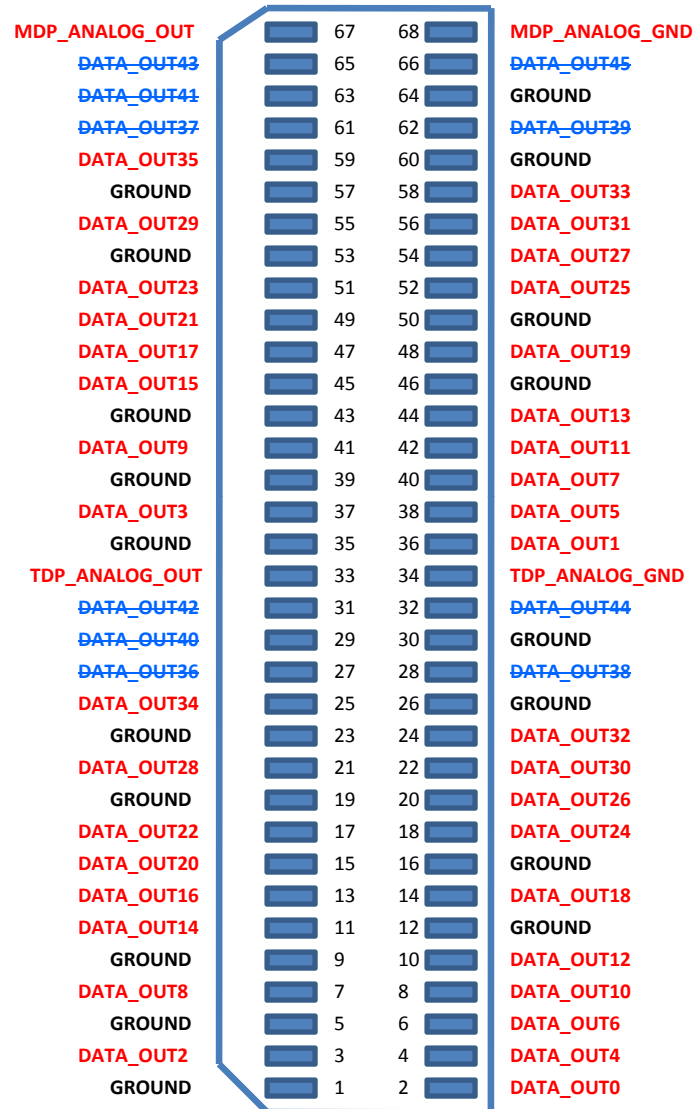


J1 (male D-68 connector)



RELAY CONTROL BOARD

J2 (Female D-68 connector)



OPTOCOUPLER BOARD

SIGNAL TERMINALS ON RELAY CONTROL BOARD (1/2)

TB15

GND	1
RC36	2
RC37	3
RC38	4
GND	5
RC39	6
RC40	7
RC41	8

TB16

RC47	8
RC46	7
RC45	6
RC44	5
GND	4
RC43	3
RC42	2
GND	1

TB13

GND	1
RC24	2
RC25	3
RC26	4
GND	5
RC27	6
RC28	7
RC29	8

TB14

RC35	8
RC34	7
RC33	6
RC32	5
GND	4
RC31	3
RC30	2
GND	1

TB11

GND	1
RC12	2
RC13	3
RC14	4
GND	5
RC15	6
RC16	7
RC17	8

TB12

RC23	8
RC22	7
RC21	6
RC20	5
GND	4
RC19	3
RC18	2
GND	1

TB9

GND	1
RC0	2
RC1	3
RC2	4
GND	5
RC3	6
RC4	7
RC5	8

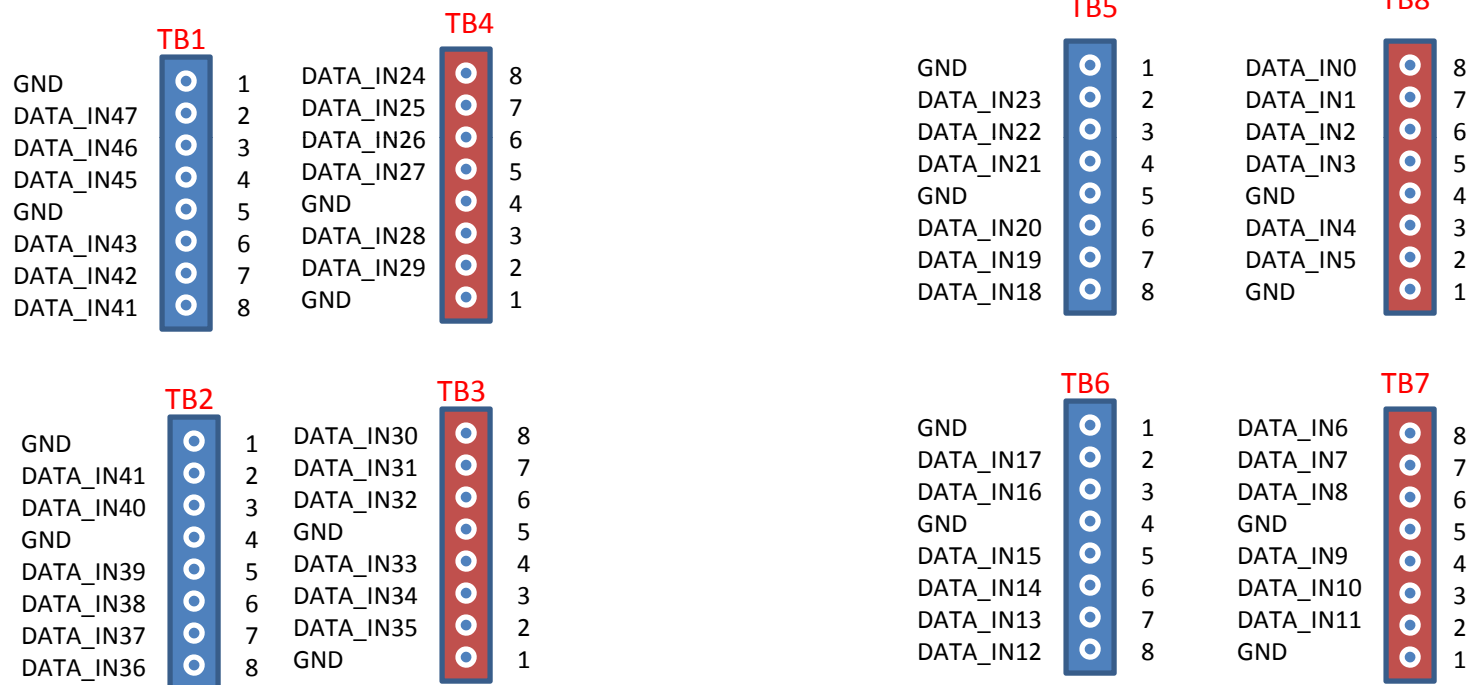
TB10

RC11	8
RC10	7
RC9	6
RC8	5
GND	4
RC7	3
RC6	2
GND	1

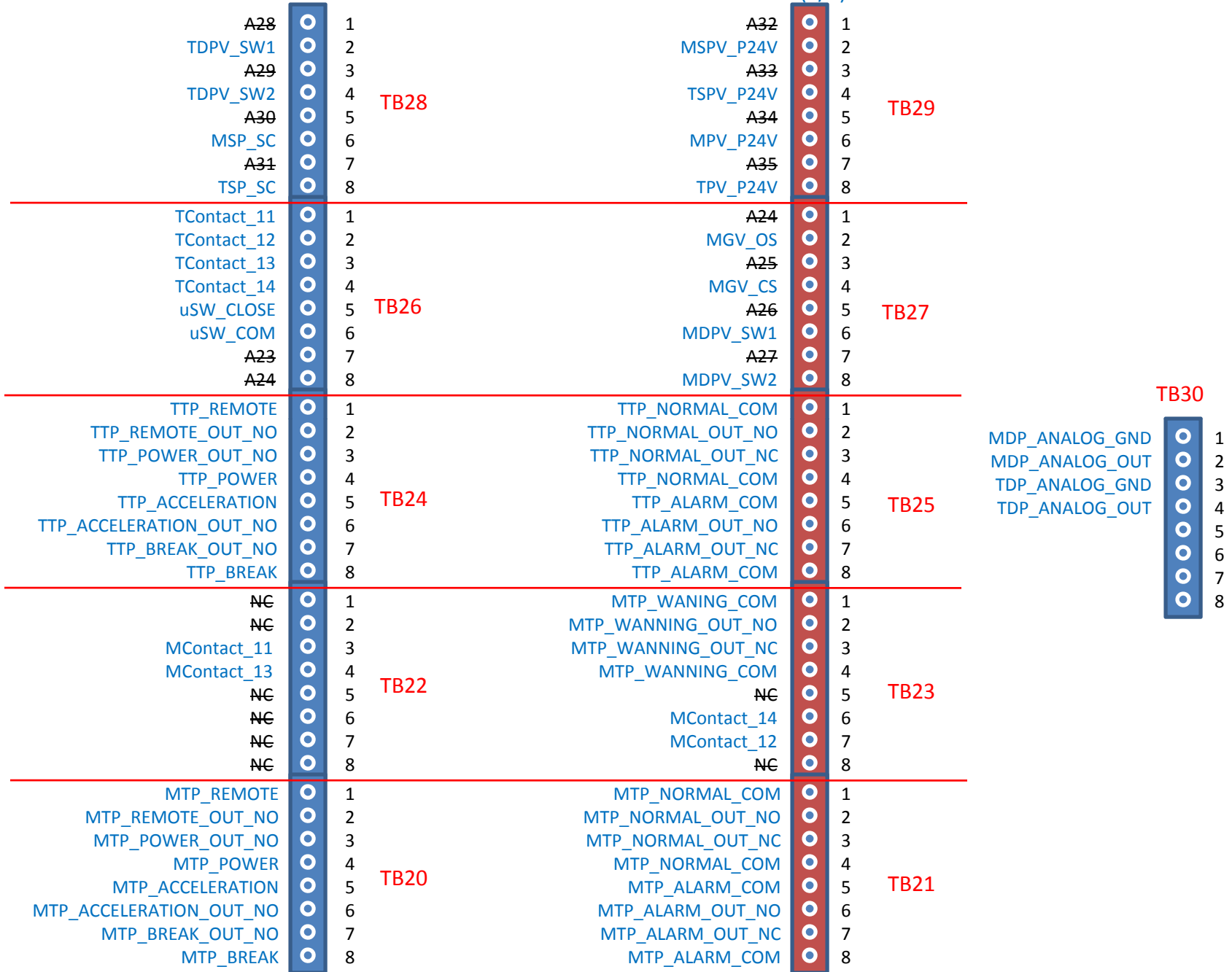
uSW_TB

GND	1
GND	2
MGV_RELAY2_7	3
MGV_RELAY1_7	4
MGV_CK_RELAY_5	5
MGV_CK_RELAY_7	6
MGV_DLY_RELAY_7	7
uSW_IN	8

SIGNAL TERMINALS ON RELAY CONTROL BOARD (2/2)



SIGNAL TERMINALS ON OPTOCOUPLER BOARD (1/2)



SIGNAL TTERMINALS ON OPTOCOUPLER BOARD (2/2)

TB31

GND	1
DATA_OUT41	2
DATA_OUT40	3
GND	4
DATA_OUT39	5
DATA_OUT38	6
DATA_OUT37	7
DATA_OUT36	8

TB33

DATA_OUT24	8
DATA_OUT25	7
DATA_OUT26	6
DATA_OUT27	5
GND	4
DATA_OUT40	3
DATA_OUT41	2
GND	1

TB35

GND	1
DATA_OUT17	2
DATA_OUT16	3
GND	4
DATA_OUT15	5
DATA_OUT14	6
DATA_OUT13	7
DATA_OUT12	8

TB37

DATA_OUT0	8
DATA_OUT1	7
DATA_OUT2	6
DATA_OUT3	5
GND	4
DATA_OUT4	3
DATA_OUT5	2
GND	1

TB30

MDP_ANALOG_GND	1
MDP_ANALOG_OUT	2
TDP_ANALOG_GND	3
TDP_ANALOG_OUT	4
DATA_OUT45	5
DATA_OUT44	6
DATA_OUT33	7
DATA_OUT32	8

TB32

DATA_OUT24	8
DATA_OUT25	7
DATA_OUT26	6
DATA_OUT27	5
GND	4
DATA_OUT28	3
DATA_OUT29	2
GND	1

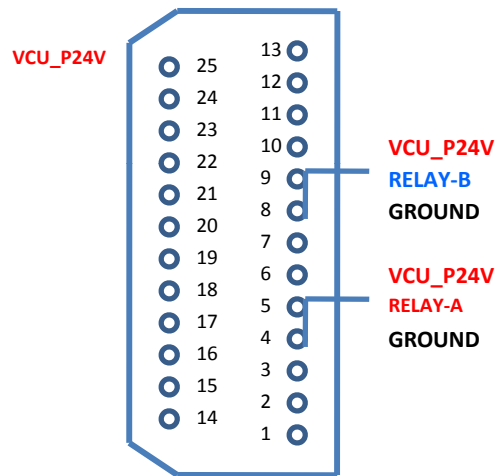
TB34

GND	1
DATA_OUT23	2
DATA_OUT22	3
DATA_OUT21	4
GND	5
DATA_OUT20	6
DATA_OUT19	7
DATA_OUT18	8

TB36

DATA_OUT6	8
DATA_OUT7	7
DATA_OUT8	6
GND	5
DATA_OUT9	4
DATA_OUT10	3
DATA_OUT11	2
GND	1

TPG256 Gauge Control Connector (CONN1, Female D-25 Connector)



4 --- 200-ohm pull-down to GROUND

5 --- RELAY-A

6 --- 50-ohm pull-up to VCU_P24V

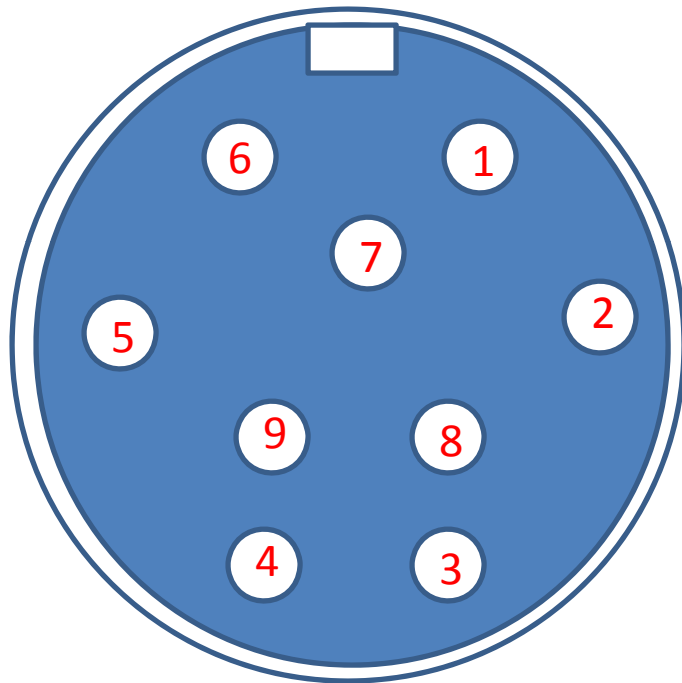
8 --- 200-ohm pull-down to GROUND

9 --- RELAY-B

10 --- 50-ohm pull-up to VCU_P24V

25 --- VCU_P24V

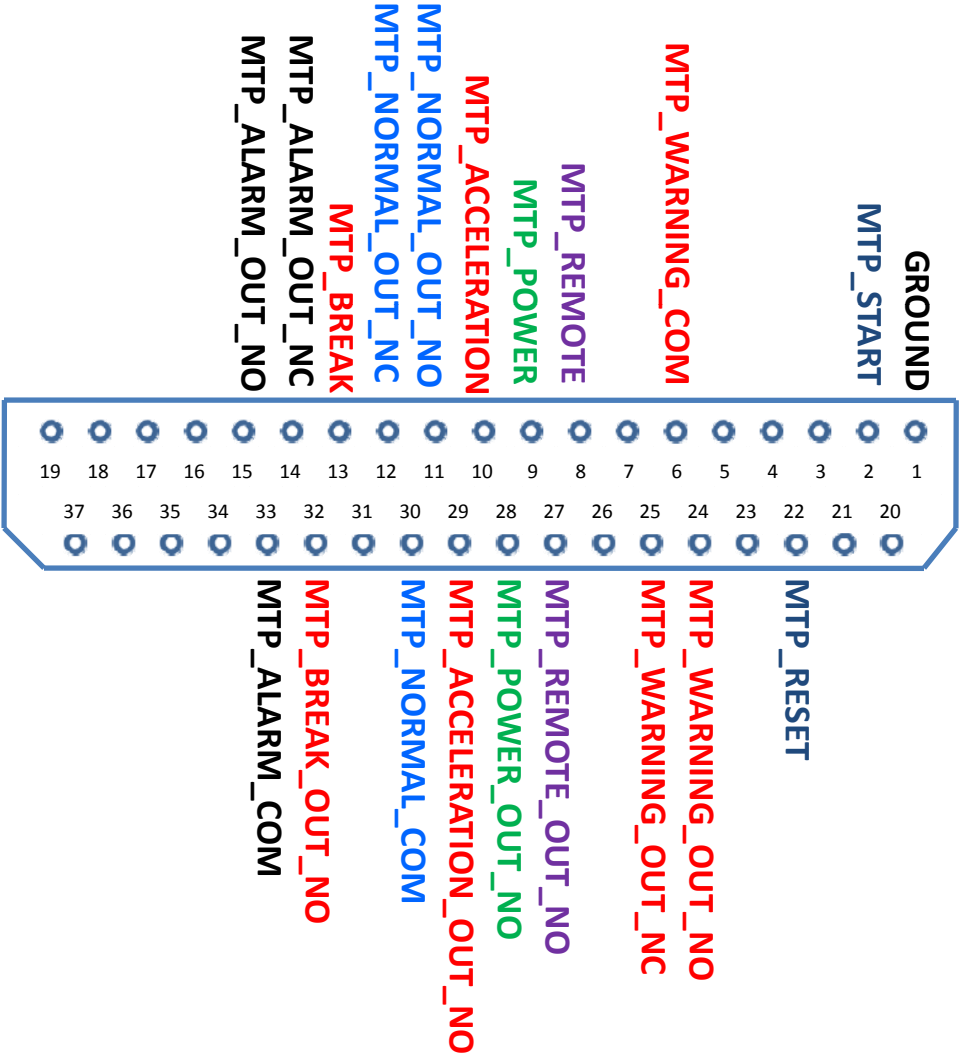
Gate Valve/Arm Switch Connector (CONNECTOR 5, FEMALE 9-pole)



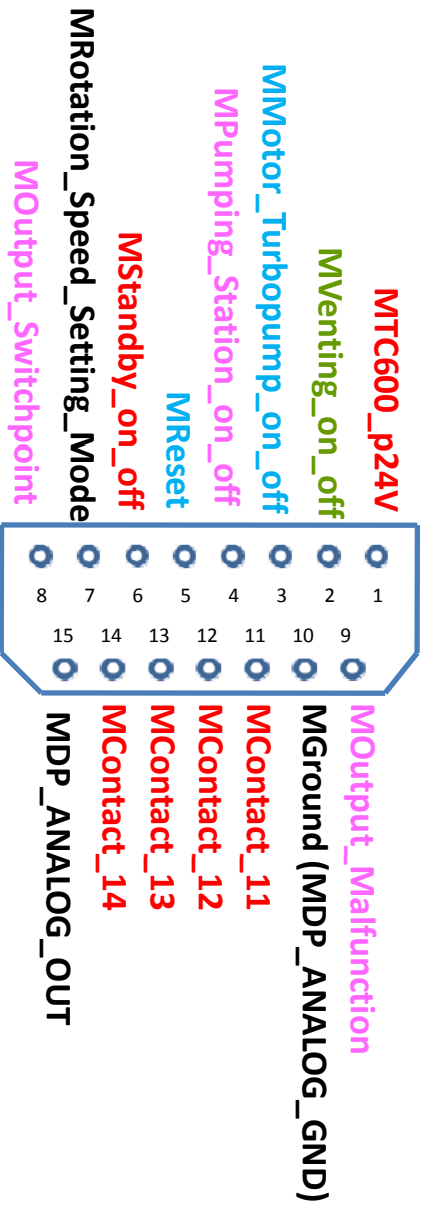
- 1 --- VP
- 2 --- VN
- 3 --- uSW_P1
- 4 --- uSW_P2
- 5 --- CS
- 6 --- CS_GND
- 7 --- VGND
- 8 --- OS
- 9 --- OS_GND

MAIN MCU-X7 Turbo Pump Control Connector

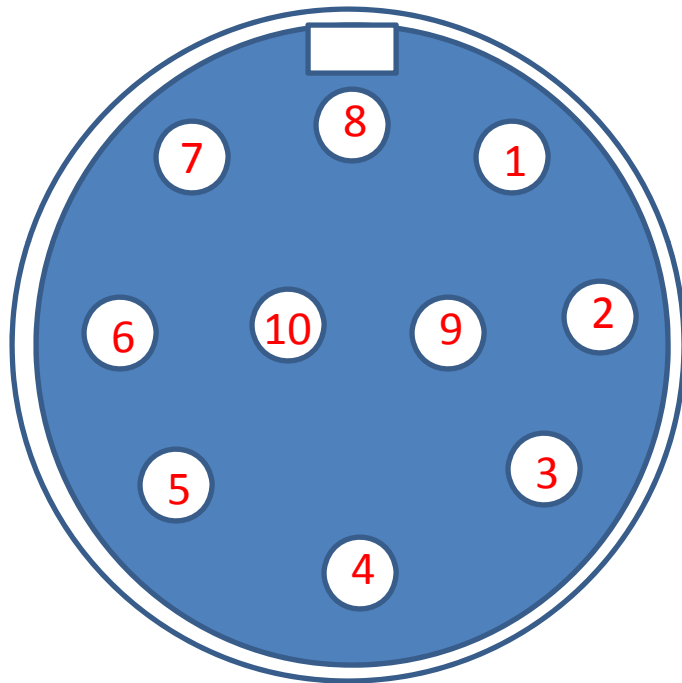
(Female D-37 Connector)



MAIN TC6000 Drag Pump Connector (CONNECTOR 6, Female D-15 Connector)

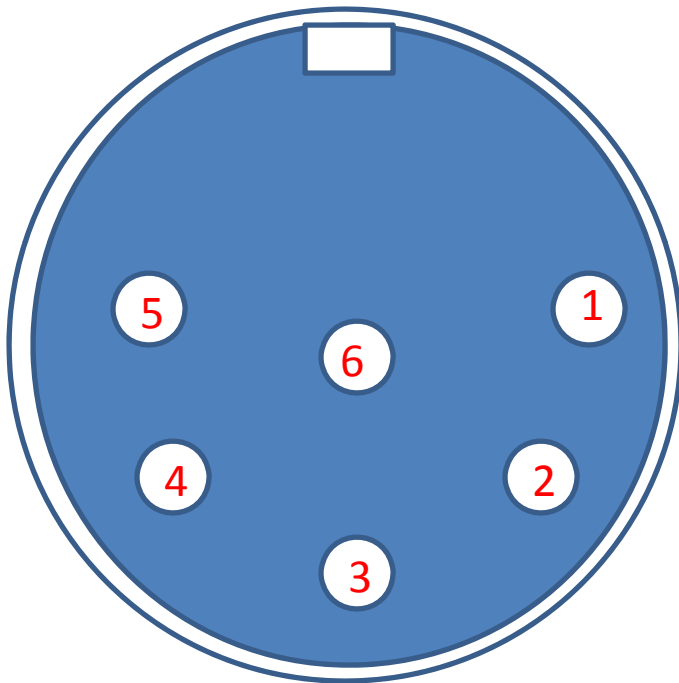


MAIN All Valves Connector (CONNECTOR 1, FEMALE 10-pole)



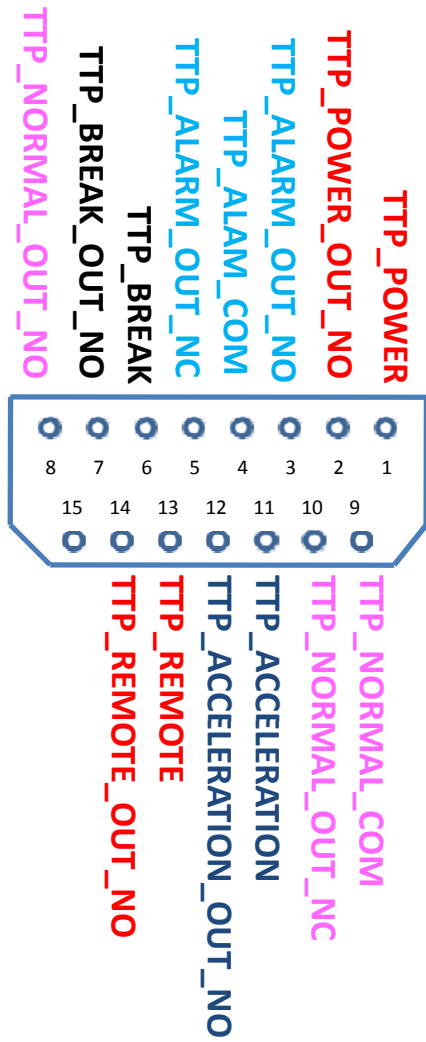
- 1 --- MAIN_GND
- 2 --- AC_MDPV_L
- 3 --- AC_MDPV_N
- 4 --- DC_MDPV_a
- 5 --- DC_MDPV_b
- 6 --- DC_MDPV_c
- 7 --- DC_MDPV_d
- 8 --- MSPV_P24V
- 9 --- MPV_P24V
- 10 --- MAIN_P24V_GND

MAIN Cooling Fans Connector (CONNECTOR 3, FEMALE 6-pole)

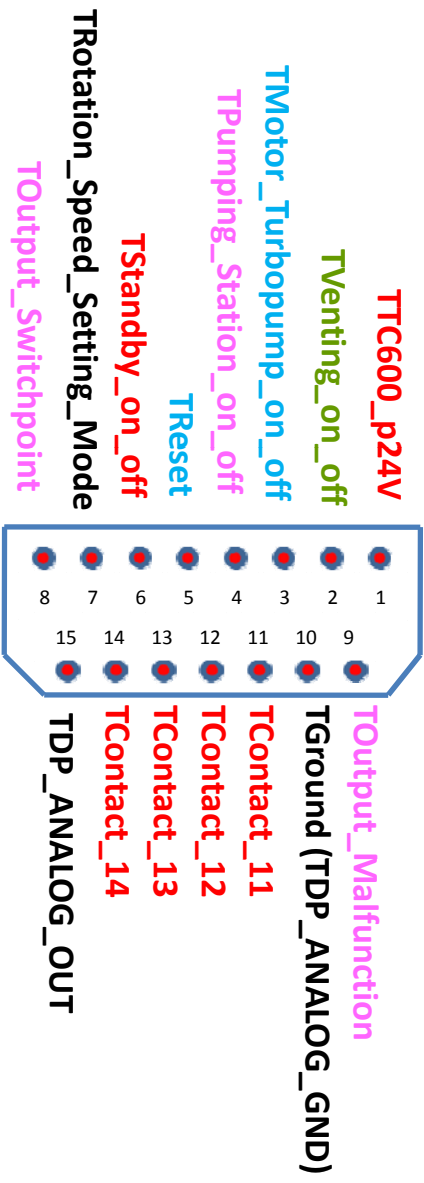


- 1 --- AC_MTPCU_I
- 2 --- AC_MTPCU_N
- 3 --- MDPCU_P24V
- 4 --- MDPCU_IN_P24V
- 5 --- MDPCU_P0V
- 6 --- MDPCU_IN_P0V

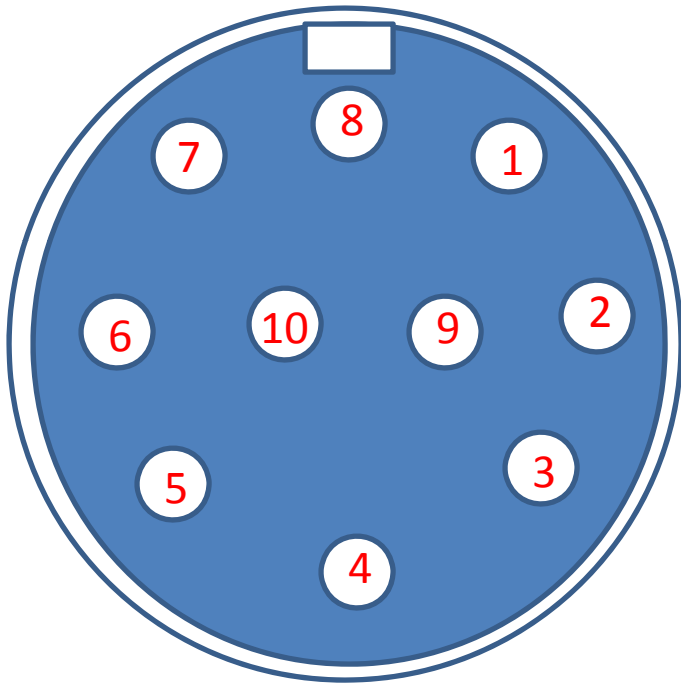
TRANSFER STP L301 Turbo Pump TB-1 Connector (Female D-15 Connector)



TRANSFER TC6000 Drag Pump Connector (CONNECTOR 7, Male D-15 Connector)

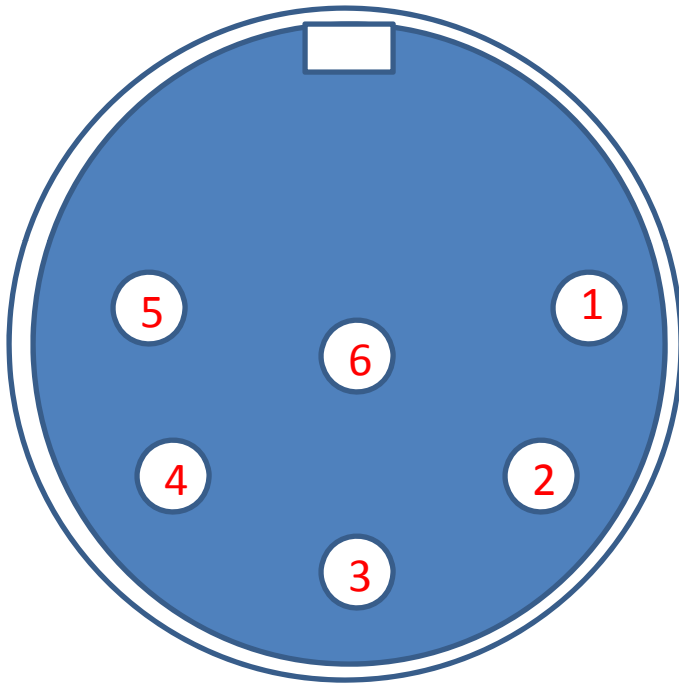


TRANSFER All Valves Connector (CONNECTOR 2, FEMALE 10-pole)



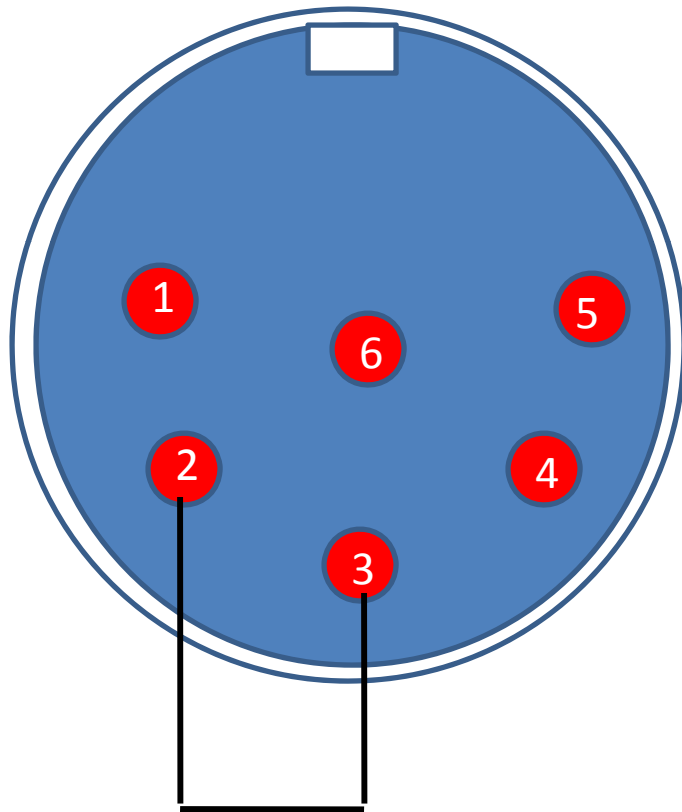
- 1 --- TRAN_GND
- 2 --- AC_TDPV_L
- 3 --- AC_TDPV_N
- 4 --- DC_TDPV_a
- 5 --- DC_TDPV_b
- 6 --- DC_TDPV_c
- 7 --- DC_TDPV_d
- 8 --- TSPV_P24V
- 9 --- TPV_P24V
- 10 --- TRAN_P24V_GND

TRANSFER Cooling Fans Connector (CONNECTOR 4, FEMALE 6-pole)



- 1 --- AC_TTPCU_I
- 2 --- AC_TTPCU_N
- 3 --- TDPCU_P24V
- 4 --- TDPCU_IN_P24V
- 5 --- TDPCU_P0V
- 6 --- TDPCU_IN_P0V

TRANSFER STP L301 Turbo Pump TB2 Connector (MALE 6-pole)



- 1 --- TB2-1_P12V
- 2 --- CONNECT TO PIN 3
- 3 --- CONNECT TO PIN 2
- 4 --- TB2-4 (No Use)
- 5 --- TTP_START
- 6 --- TTP_RESET