RELAY CONTROL CHART

CONTROL	CODE	DEVICE	FUNCTION	CONNECTOR

JUMPER TABLE

JP#	ON	OFF
1		
2		
3		
4		
5		

* SEE ASSEMBLY INSTRUCTIONS

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	ORIGINATION NHR-038837	APR-2014	A.C.
B	CHANGES PER ECR-048644	APR-2014	A.C.
C	CHANGES PER ECR-053851	JUN-2015	M.B.

REV C CHANGES

C49, C107 - 10UF 25V
R66, R88 - 4K7

P.O SPEC.	BK/BD SPEC.	SOCKET OEM	OEM PART#	HANDLER

TEMPLATE ENGINEER R MARION	DATE 20FEB07	
HARDWARE SERVICES R MACDONALD	20FEB07	
HARDWARE SYSTEMS J BURKE	20FEB07	
TEST ENGINEER M KNAPP	20FEB07	
COMPONENT ENGINEER G CELEDONIO	20FEB07	
TEST PROCESS N/A	N/A	
HARDWARE RELEASE R AMARILLE	20FEB07	
DESIGNER K PILARCA	09JUL14	
PTD ENGINEER A COZMA	09JUL14	
CHECKER N/A	N/A	

SCHEMATIC

ANALOG DEVICES

HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ
PACKAGE : PinCount-lead N/A Package-family
: Pitch-pitch StyleVendor Style

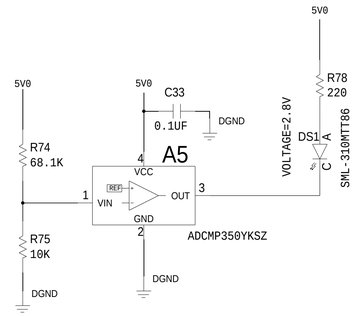
<User Define>
<User Define>
<User Define>

MASTER PROJECT TEMPLATE	TESTER TEMPLATE	DRAWING NO.	REV.
TBD	no_template	02_038458	C

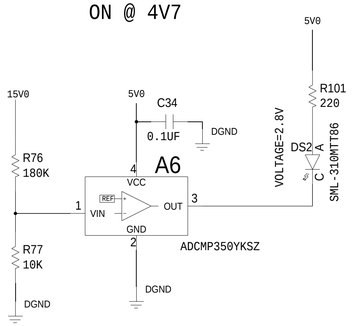
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS X.XX +-0.010 X.XXX +-0.005 | FRACTIONS +-1/32 | ANGLES +-2

SIZE	SCALE	CODE ID NO.	SHEET
D	1:1	CodeID	SHEET 1 OF 10

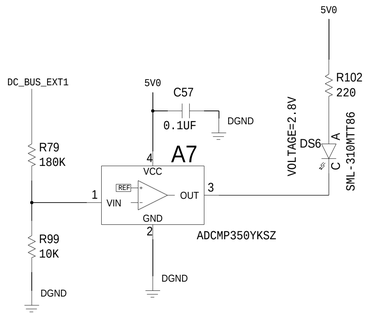
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



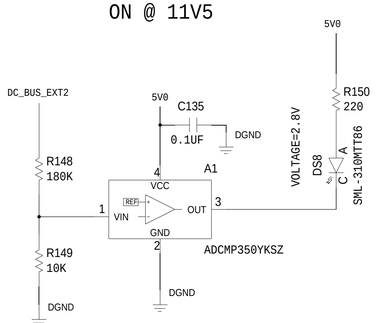
VADJ POWER GOOD
ON @ 4V7



12V POWER GOOD
ON @ 11V5

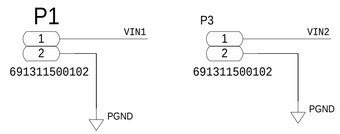


MOTOR1 VOLTAGE POWER GOOD
ON @ 11V5



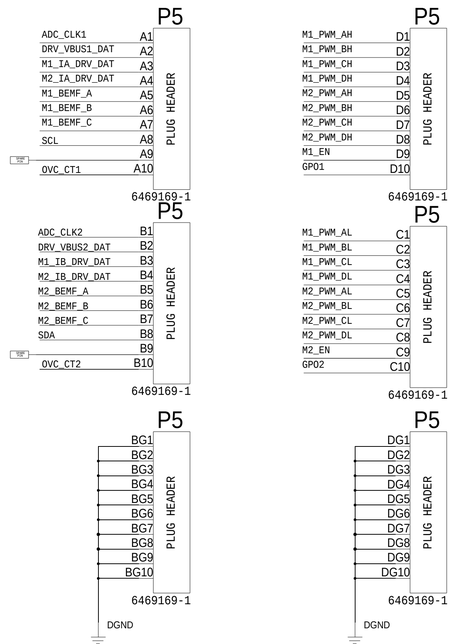
MOTOR2 VOLTAGE POWER GOOD
ON @ 11V5

POWER CONNECTORS

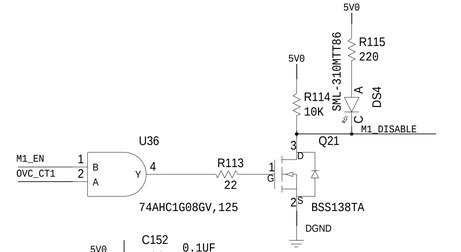


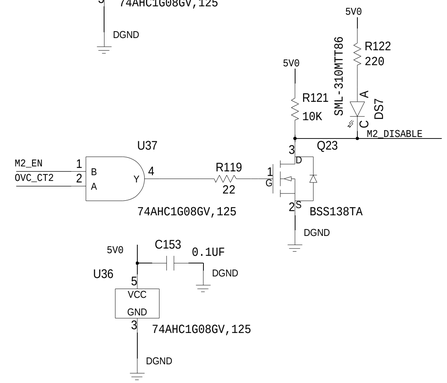
MOTOR CONNECTORS

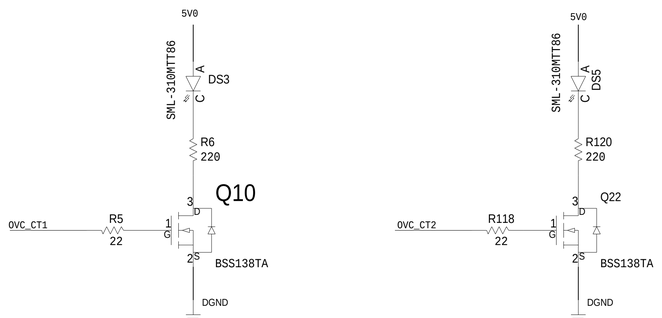
DIGITAL CONNECTOR



LEDS







ANALOG DEVICES

SCHEMATIC

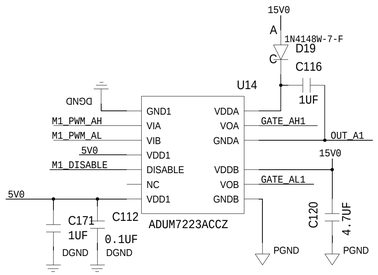
HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

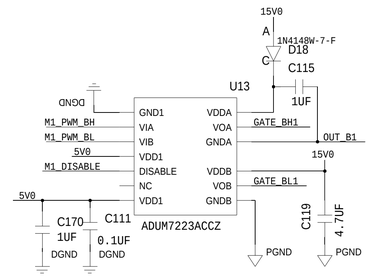
DESIGN VIEW <DESIGN_VIEW>	DRAWING NO. 02_038458	REV C
PTD ENGINEER A COZMA	SIZE D / SCALE 1:1	SHEET 2 OF 10

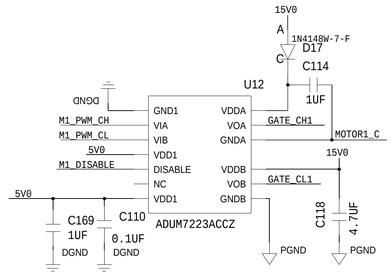
MOTOR1 DRIVE STAGE

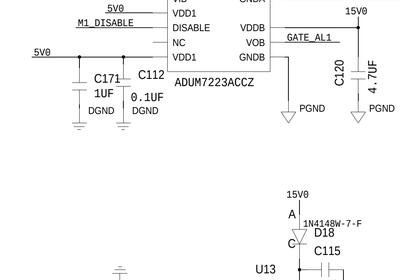
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

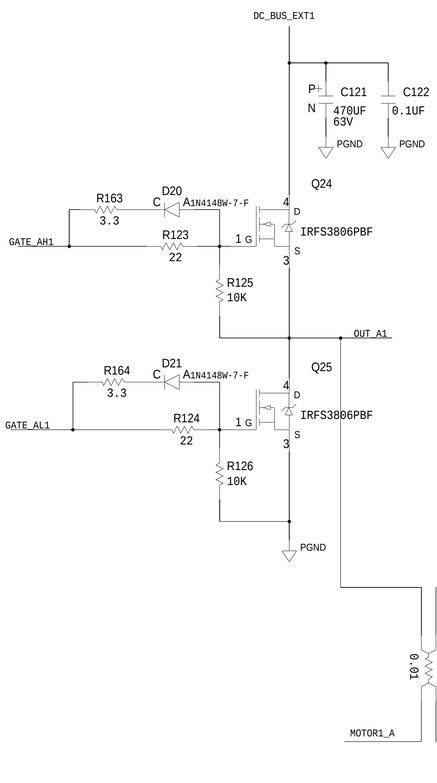
BOOTSTRAPPED ISOLATED GATE DRIVERS

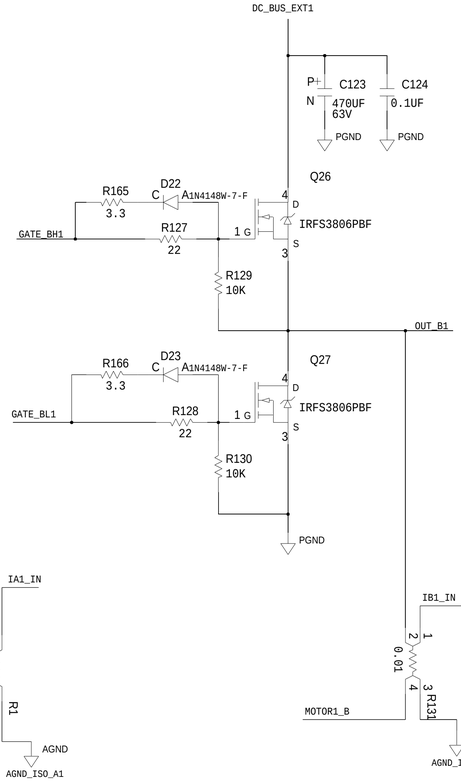


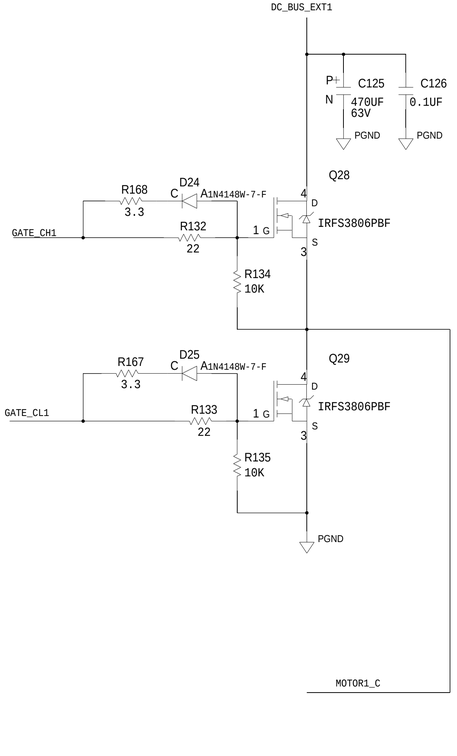


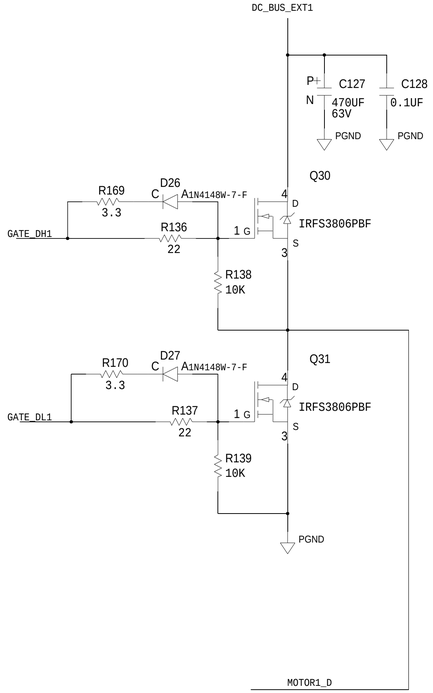












PHASE CURRENT	OUTPUT VOLTAGE
+/- 20A	+/- 0.2V

ANALOG DEVICES

SCHEMATIC

HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

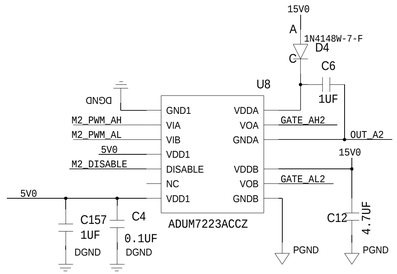
DESIGN VIEW	DRAWING NO.	REV
<DESIGN_VIEW>	02_038458	C

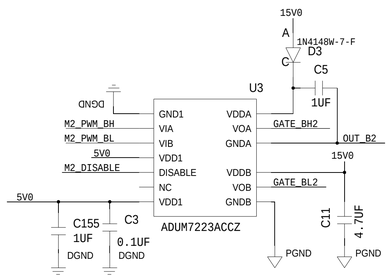
PTD ENGINEER	SIZE	SCALE	SHEET 3 OF 10
A COZMA	D	1:1	

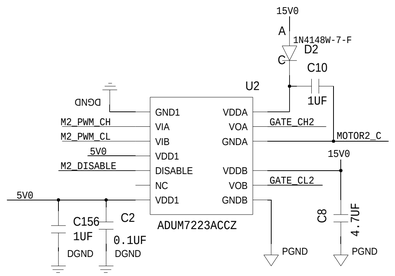
MOTOR2 DRIVE STAGE

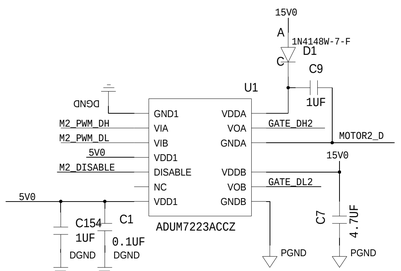
BOOTSTRAPPED ISOLATED
GATE DRIVERS

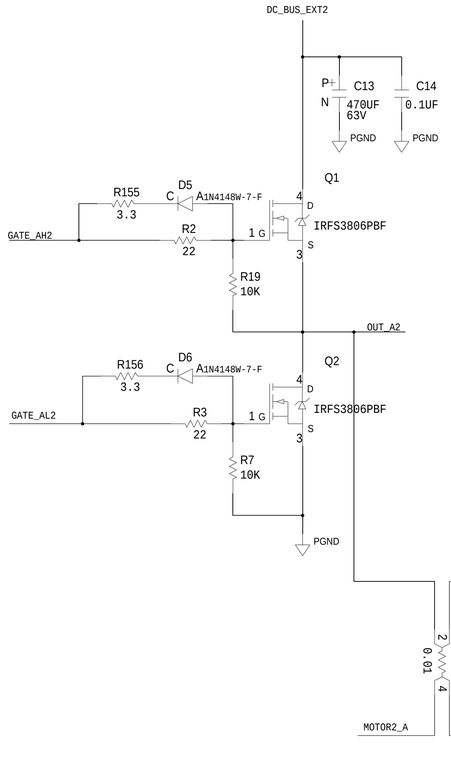
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

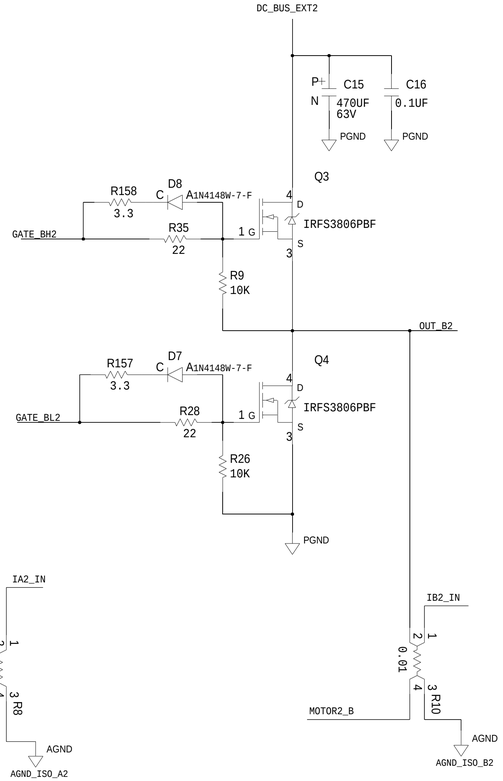


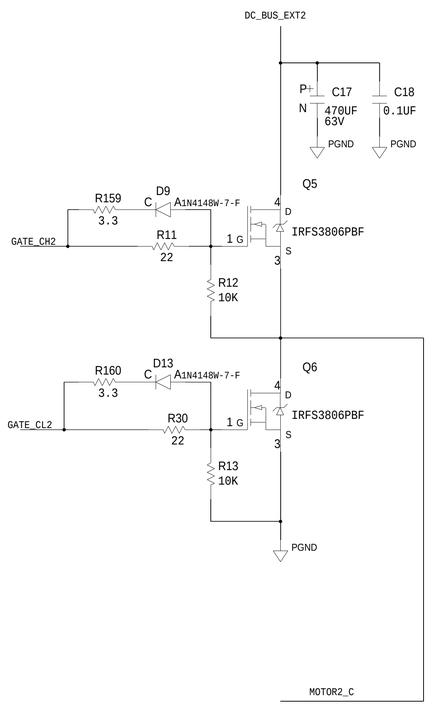


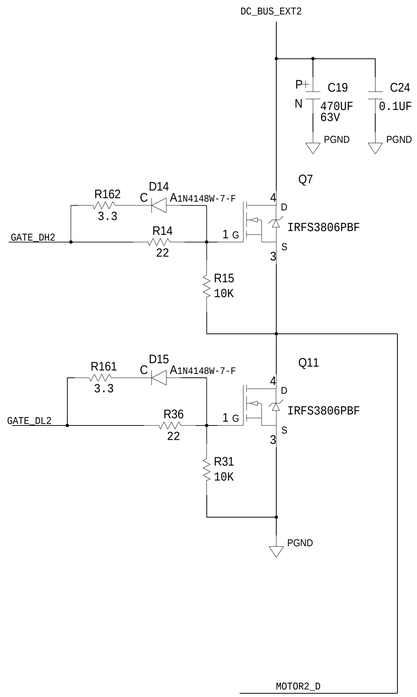












PHASE CURRENT	OUTPUT VOLTAGE
+/- 20A	+/- 0.2V

ANALOG DEVICES

SCHEMATIC

HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

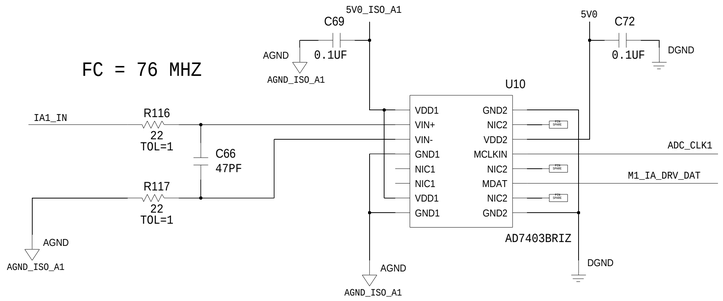
DESIGN VIEW	DRAWING NO.	REV
<DESIGN_VIEW>	02_038458	C

PTD ENGINEER	SIZE	SCALE	SHEET
A COZMA	D	1:1	SHEET 4 OF 10

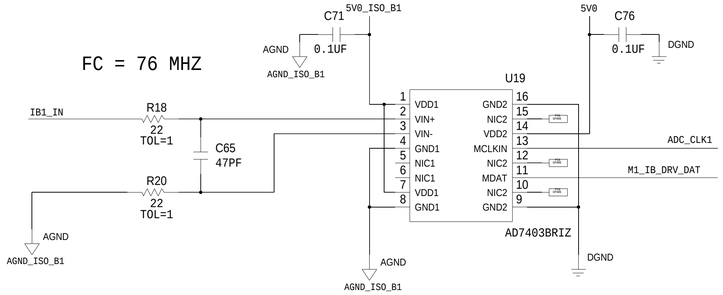
PHASE CURRENTS MEASUREMENTS

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

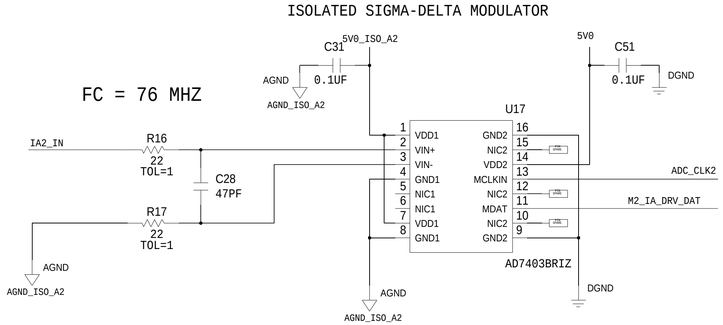
ISOLATED SIGMA-DELTA MODULATOR



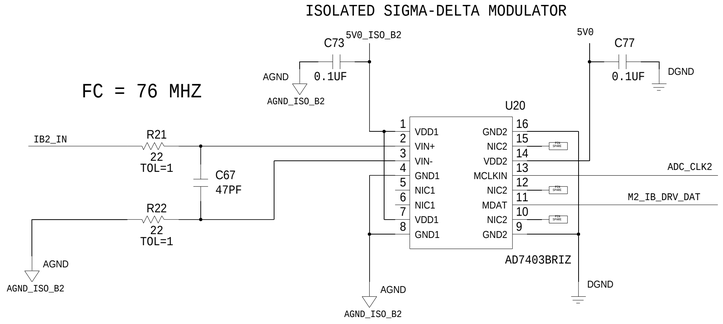
ISOLATED SIGMA-DELTA MODULATOR



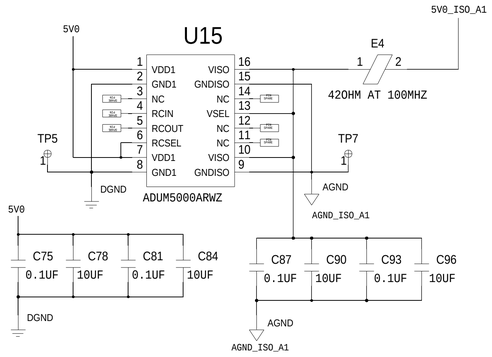
ISOLATED SIGMA-DELTA MODULATOR



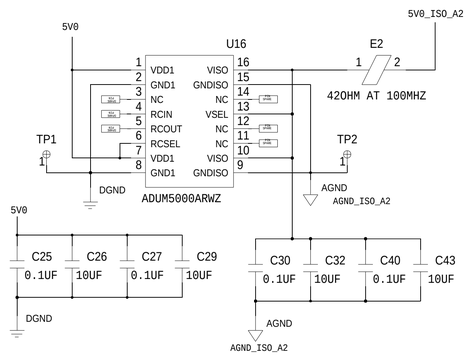
ISOLATED SIGMA-DELTA MODULATOR



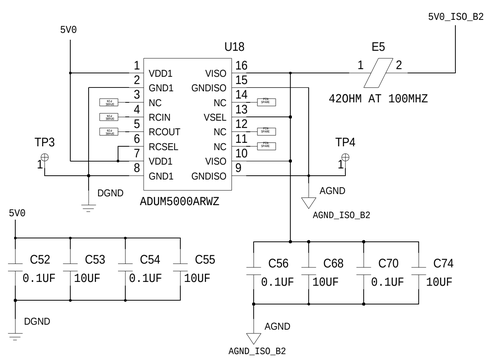
ISOLATED POWER SUPPLY



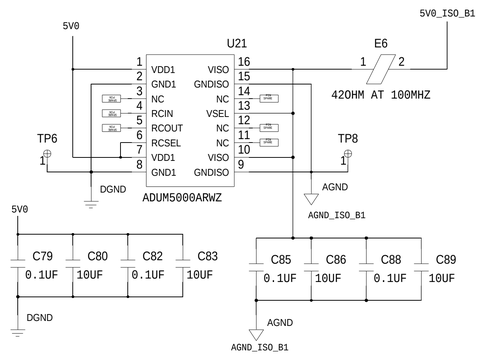
ISOLATED POWER SUPPLY



ISOLATED POWER SUPPLY



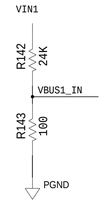
ISOLATED POWER SUPPLY

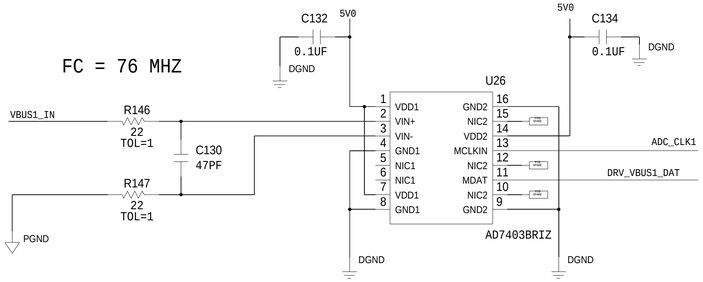


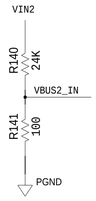
ANALOG DEVICES	SCHEMATIC		
	HW TYPE : Customer Evaluation Product(s): AD7403 : MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ		
THIS DRAWING IS THE PROPERTY OF ANALOG DEVICES INC. IT IS NOT TO BE REPRODUCED OR COPIED, IN WHOLE OR IN PART, OR USED IN FURNISHING INFORMATION TO OTHERS, OR FOR ANY OTHER PURPOSE DETRIMENTAL TO THE INTERESTS OF ANALOG DEVICES. THE EQUIPMENT SHOWN HEREIN MAY BE PROTECTED BY PATENTS OWNED OR CONTROLLED BY OWNED ANALOG DEVICES.	DESIGN VIEW <DESIGN_VIEW>	DRAWING NO. 02_038458	REV C
	PTD ENGINEER A COZMA	SIZE D	SCALE 1:1
		SHEET 5 OF 10	

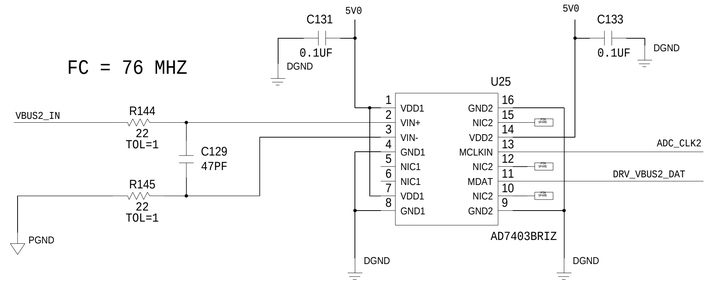
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

VBUS MEASUREMENTS









INPUT VOLTAGE	OUTPUT VOLTAGE
12 - 48V	0.05 - 0.2V

ANALOG DEVICES

SCHEMATIC

HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

DESIGN VIEW	DRAWING NO.	REV
<DESIGN_VIEW>	02_038458	C

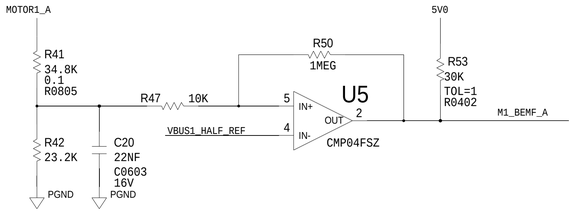
PTD ENGINEER	SIZE	SCALE	SHEET
A COZMA	D	1:1	SHEET 6 OF 10

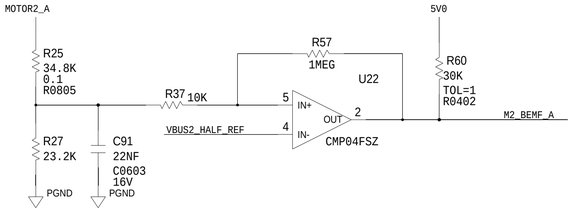
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

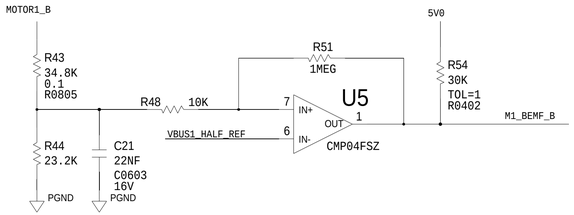
BEMF SENSE

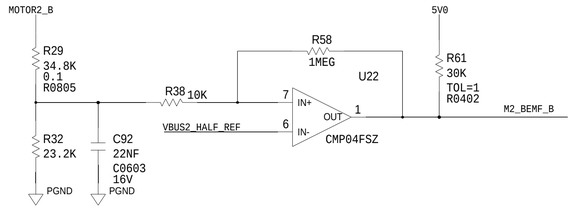
MOTOR_BEMF	COMP_INPUT
24V	9.6V
12V	4.8V
6V	2.4V

-3DB ~ 500HZ

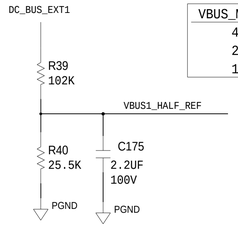


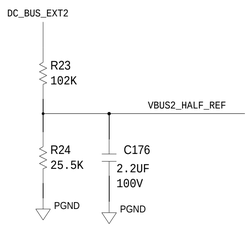


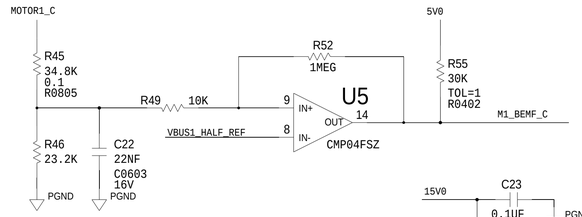


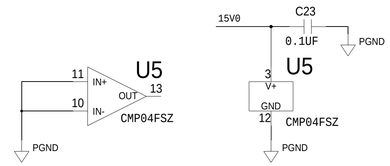


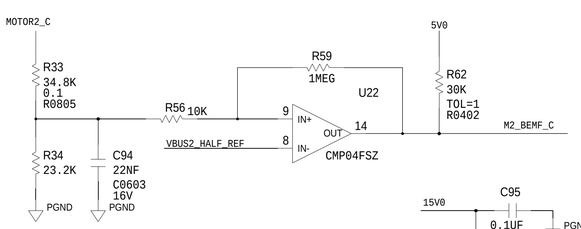
VBUS_MOTOR	VBUS_HALF_REF
48V	9.6V
24V	4.8V
12V	2.4V

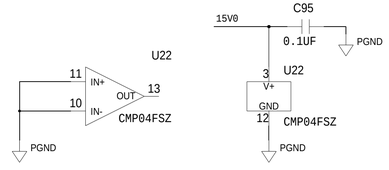












ANALOG DEVICES

SCHEMATIC

HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

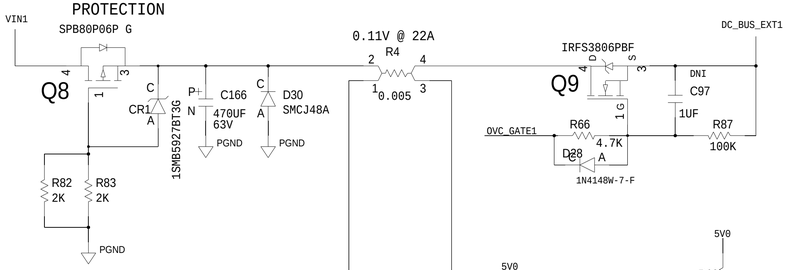
DESIGN VIEW	DRAWING NO.	REV
<DESIGN_VIEW>	02_038458	C

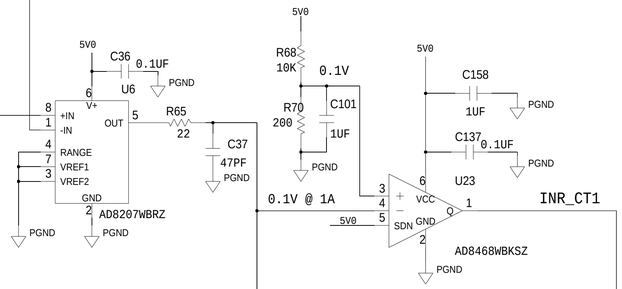
PTD ENGINEER	SIZE	SCALE	SHEET
A COZMA	D	1:1	7 OF 10

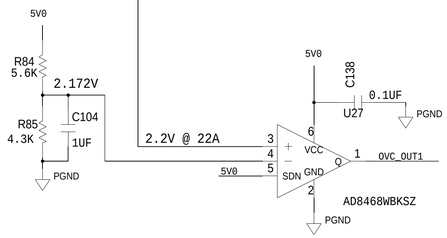
OVER-CURRENT & INRUSH PROTECTION

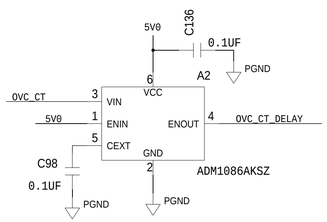
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

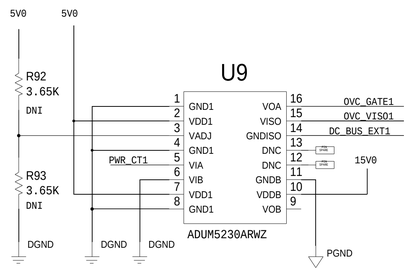
REVERSE POLARITY PROTECTION

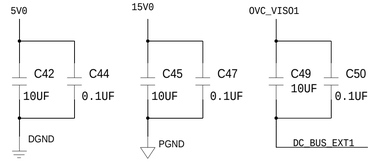


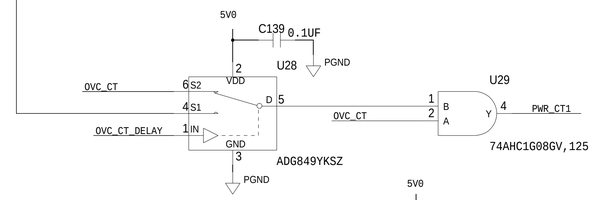




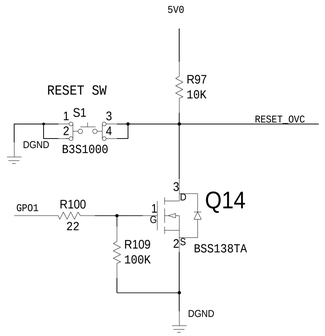


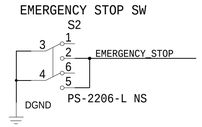


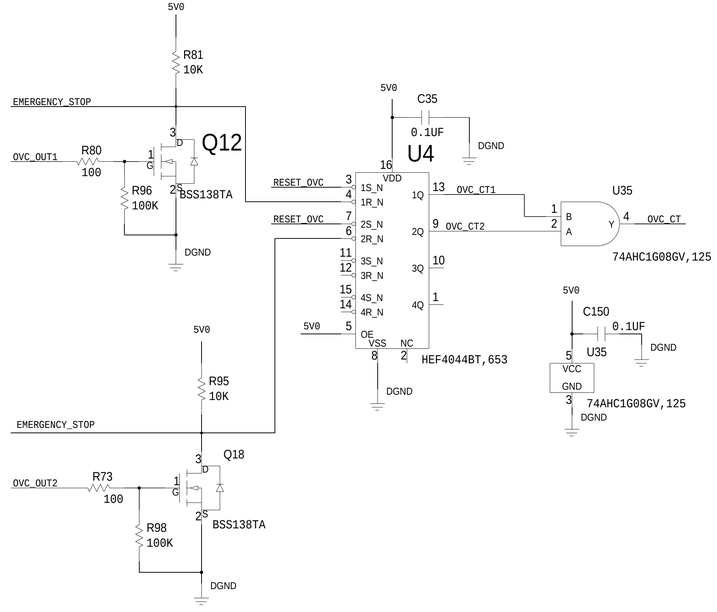




LATCHING OVC FAULT








```
INR_CT1 = IN_CURRENT1 < REF_INR; INR_CT1 : 1 - INPUT CURRENT BELOW INRUSH TRIP POINT
                                           0 - INPUT CURRENT ABOVE INRUSH TRIP POINT
OVC_OUT1 = IN_CURRENT1 < REF_OVC;  OVC_OUT1:    0 - INPUT CURRENT BELOW OVERCURRENT TRIP POINT
                                                1 - INPUT CURRENT ABOVE OVERCURRENT TRIP POINT
INR_CT2 = IN_CURRENT2 < REF_INR; INR_CT2 : 1 - INPUT CURRENT BELOW INRUSH TRIP POINT
                                           0 - INPUT CURRENT ABOVE INRUSH TRIP POINT
 OVC_OUT2 = IN_CURRENT2 < REF_OVC;  OVC_OUT2:    0 - INPUT CURRENT BELOW OVERCURRENT TRIP POINT
                                                1 - INPUT CURRENT ABOVE OVERCURRENT TRIP POINT


OVC_CT1 = !OVC_OUT1
OVC_CT2 = !OVC_OUT2
OVC_CT = OVC_CT1 & OVC_CT2
PWR_CT1 = INR_CT1 & OVC_CT;  PWR_CT1:  0 - FAULT, SYSTEM POWER OFF
                                       1 - GOOD, SYSTEM POWER ON
PWR_CT2 = INR_CT2 & OVC_CT;  PWR_CT2:  0 - FAULT, SYSTEM POWER OFF
                                       1 - GOOD, SYSTEM POWER ON
```


ANALOG DEVICES

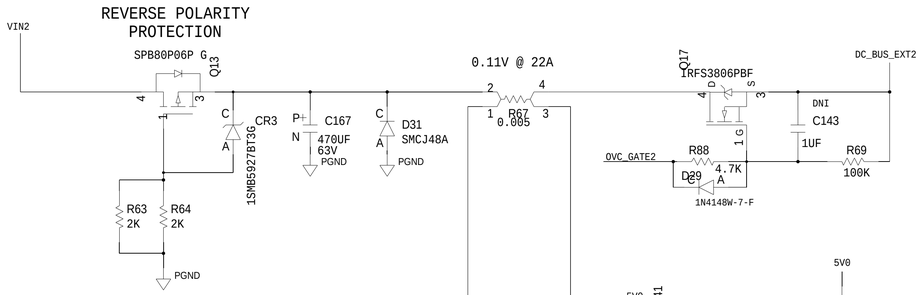
SCHEMATIC

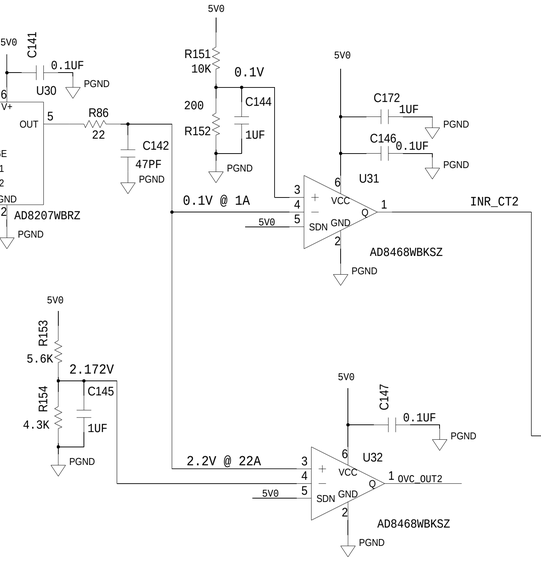
HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

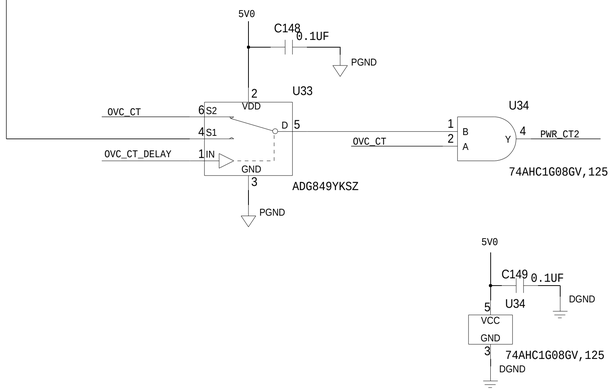
DESIGN VIEW	DRAWING NO.	REV
<DESIGN_VIEW>	02_038458	C
PTD ENGINEER: A COZMA	SIZE: D / SCALE: 1:1	SHEET 8 OF 10

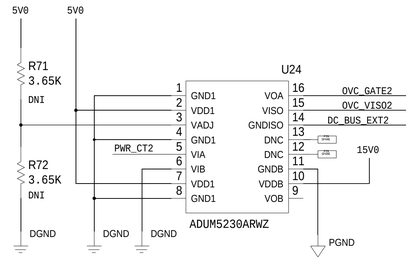
OVER-CURRENT & INRUSH PROTECTION

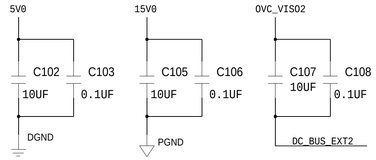
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED












```
INR_CT1 = IN_CURRENT1 < REF_INR; INR_CT1 : 1 - INPUT CURRENT BELOW INRUSH TRIP POINT
                                           0 - INPUT CURRENT ABOVE INRUSH TRIP POINT

OVC_OUT1 = IN_CURRENT1 < REF_OVC;  OVC_OUT1:    0 - INPUT CURRENT BELOW OVERCURRENT TRIP POINT
                                                1 - INPUT CURRENT ABOVE OVERCURRENT TRIP POINT

INR_CT2 = IN_CURRENT2 < REF_INR; INR_CT2 : 1 - INPUT CURRENT BELOW INRUSH TRIP POINT
                                           0 - INPUT CURRENT ABOVE INRUSH TRIP POINT

 OVC_OUT2 = IN_CURRENT2 < REF_OVC;  OVC_OUT2:    0 - INPUT CURRENT BELOW OVERCURRENT TRIP POINT
                                                1 - INPUT CURRENT ABOVE OVERCURRENT TRIP POINT



OVC_CT1 = !OVC_OUT1
OVC_CT2 = !OVC_OUT2
OVC_CT = OVC_CT1 & OVC_CT2

PWR_CT1 = INR_CT1 & OVC_CT;  PWR_CT1:  0 - FAULT, SYSTEM POWER OFF
                                       1 - GOOD, SYSTEM POWER ON

PWR_CT2 = INR_CT2 & OVC_CT;  PWR_CT2:  0 - FAULT, SYSTEM POWER OFF
                                       1 - GOOD, SYSTEM POWER ON
```

ANALOG DEVICES

SCHEMATIC

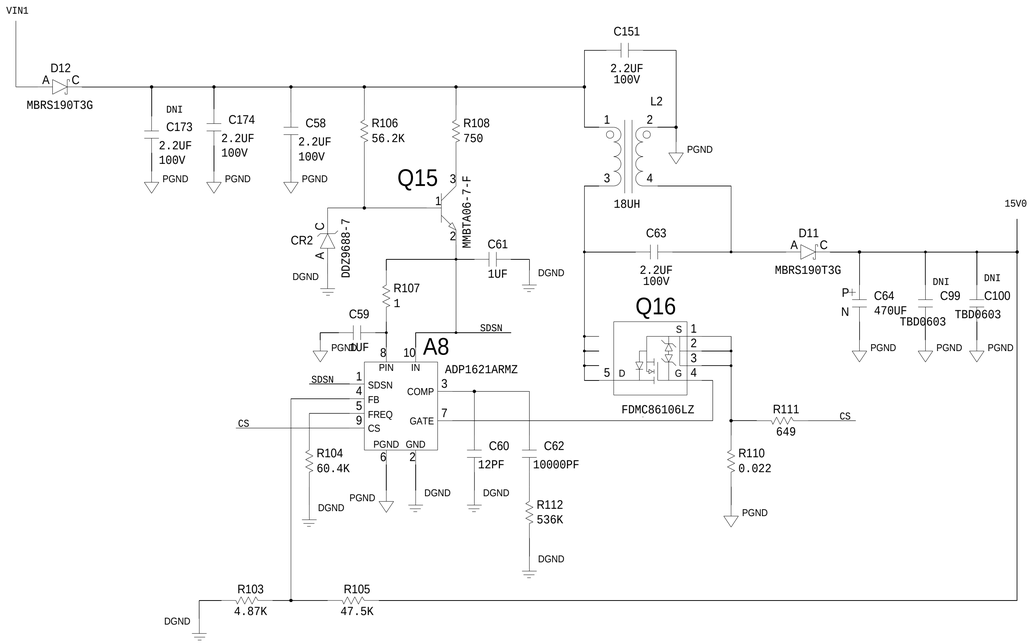
HW TYPE : Customer Evaluation
Product(s): AD7403
: MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ

DESIGN VIEW	DRAWING NO.	REV
<DESIGN_VIEW>	02_038458	C

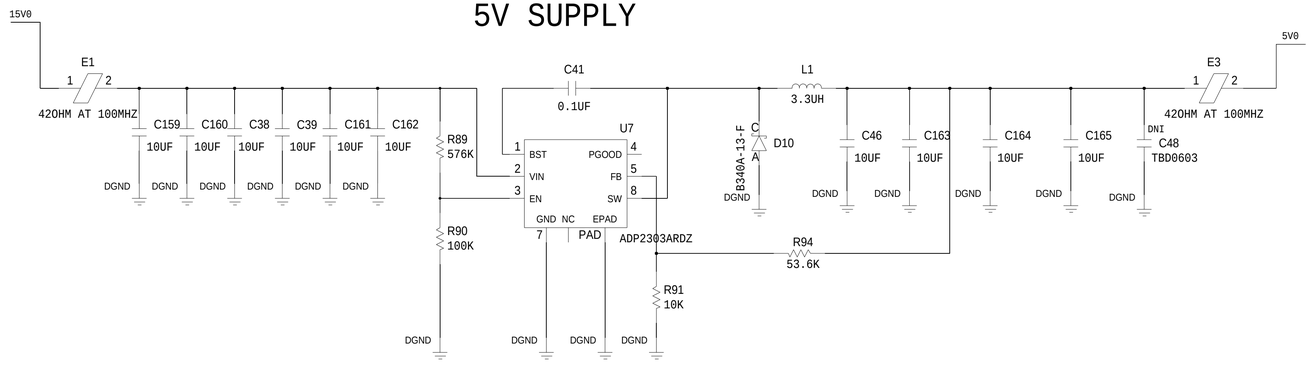
PTD ENGINEER	SIZE	SCALE	SHEET
A COZMA	D	1:1	9 OF 10

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

15V SUPPLY



5V SUPPLY



ANALOG DEVICES	SCHEMATIC			
	HW TYPE : Customer Evaluation Product(s): AD7403 : MOTOR CONTROL BD - LOW VOLTAGE DRIVE EBZ			
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	PTD ENGINEER A COZMA	SIZE D	SCALE 1:1	SHEET 10 OF 10