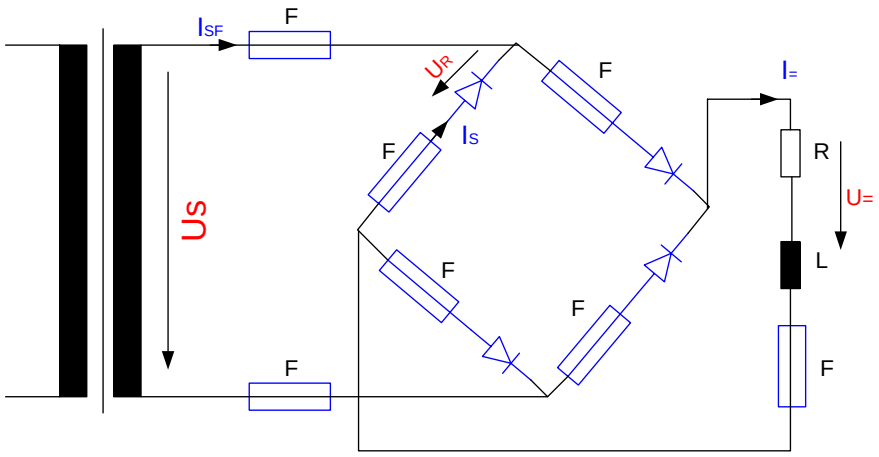
help

Selection of the proper semiconductor fuse for the protection of power electronics circuit can be a time-consuming process.

Ultra Quick select software makes it simple and save time and money.
Help is made by five different examples.

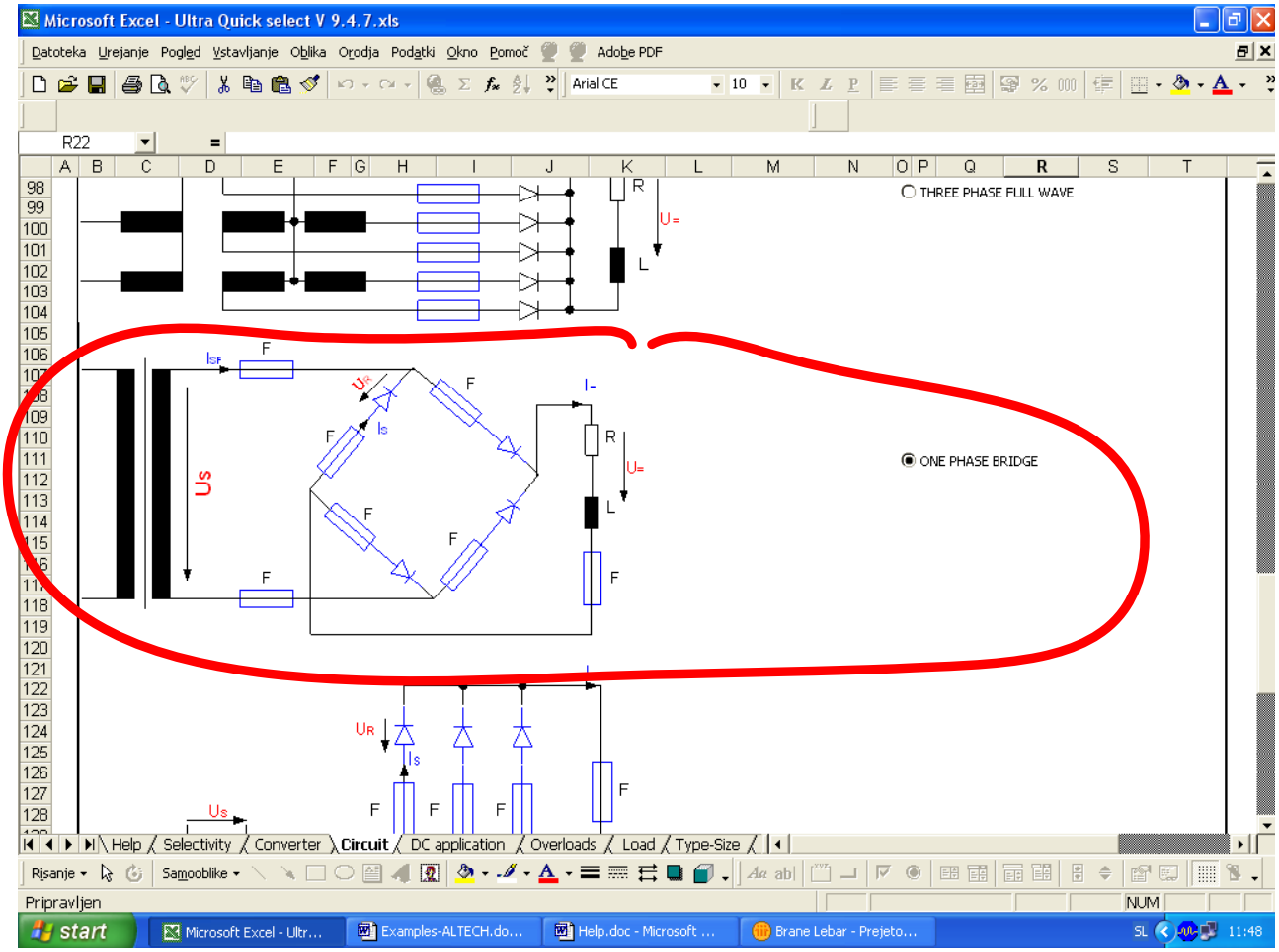
Example Nr. 1:

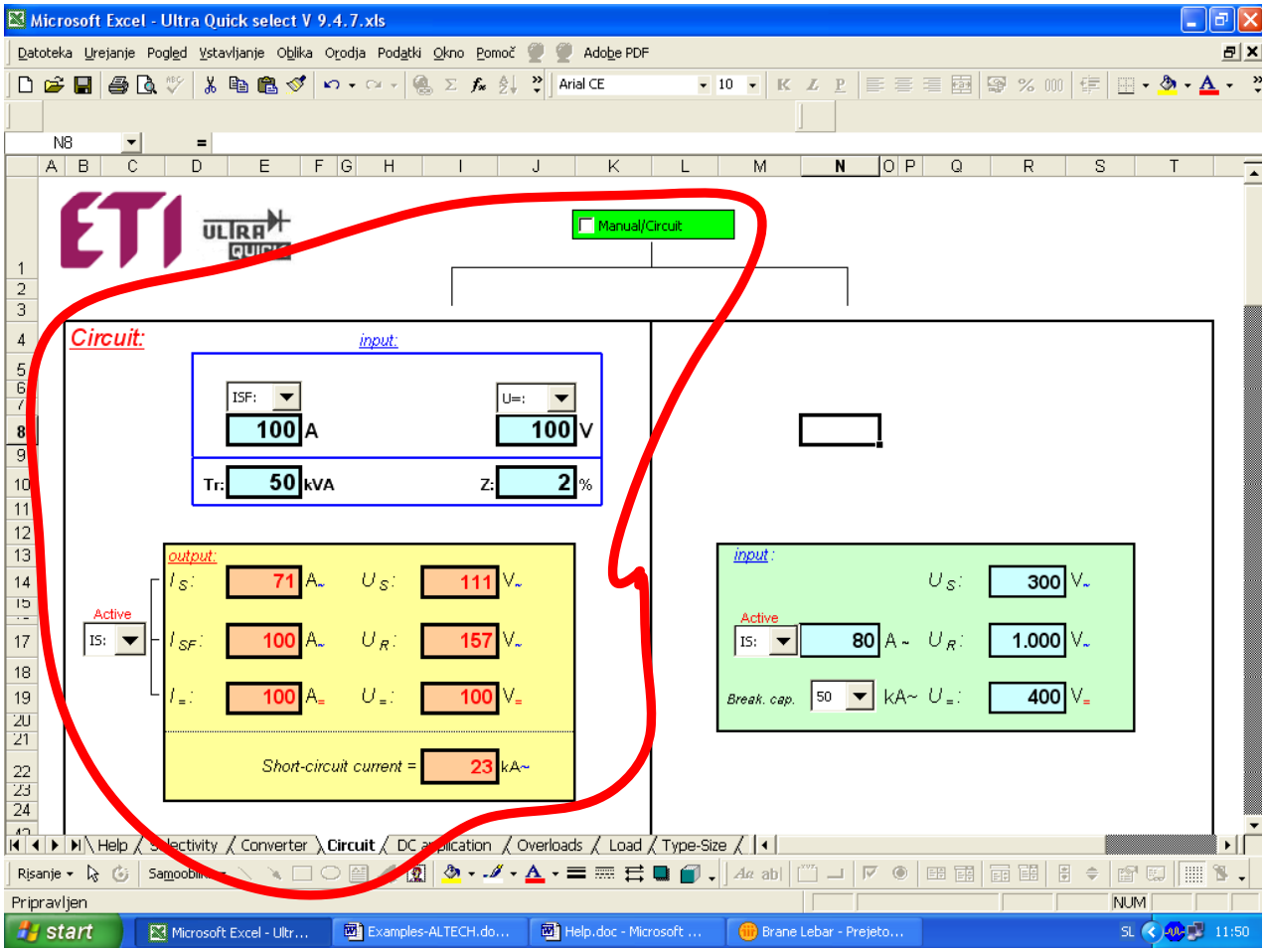
We have ONE PHASE BRIDGE with the next circuit:

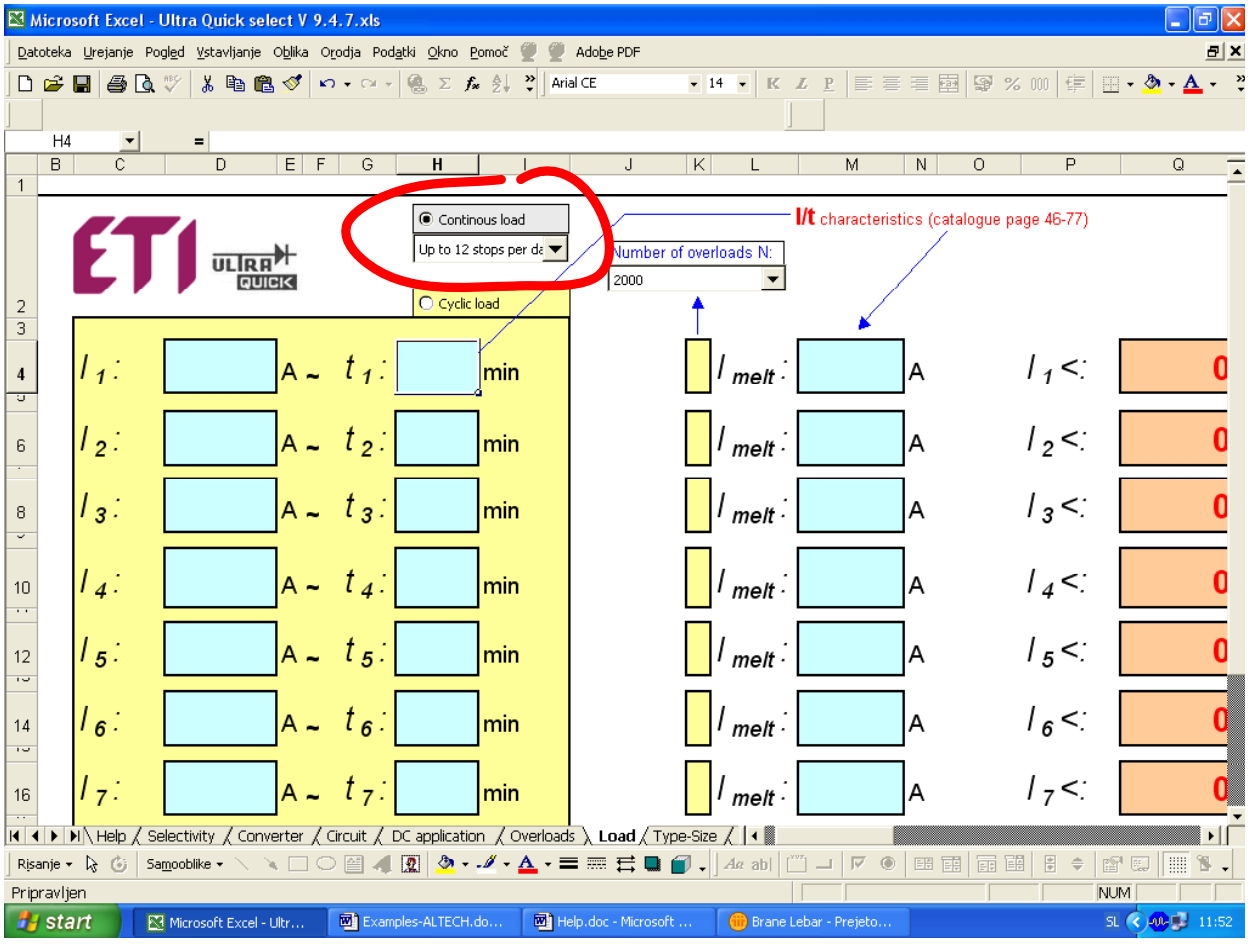


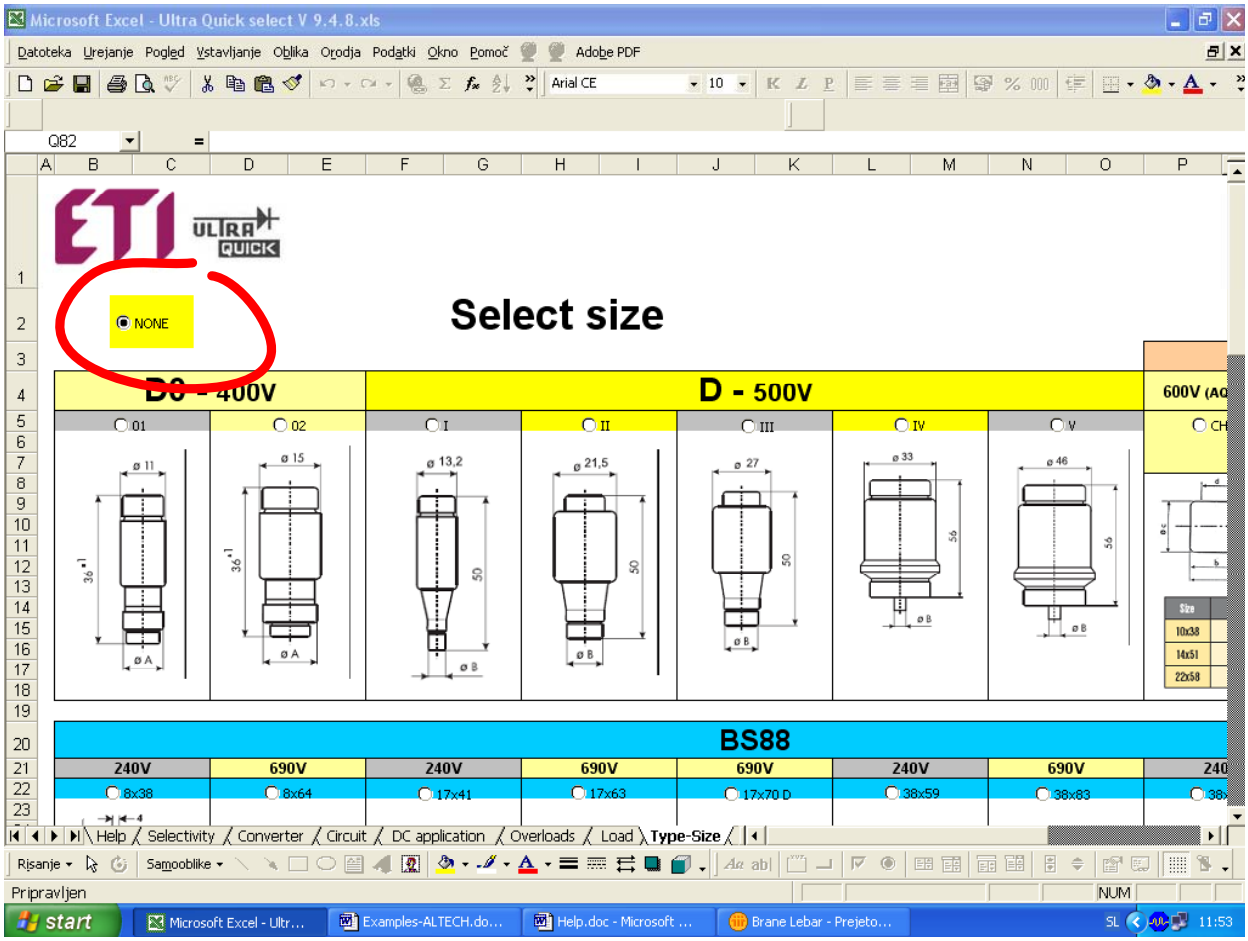
I_{SF}=100A, continous load/12 stops per day
$U_{=}$ =100V
I^2t (diode)=1.000A^2s
Transformer power=50kVA
Transformer impendance=2%
COS fi=0,3
T_{amb}=40 deg. C
Fan=2m/s
Cable cross section=50mm^2
Frequency=50Hz
Characteristics: aR
Possibility of mountaing microswitch NVS5!
Size/type of fuse is not important!

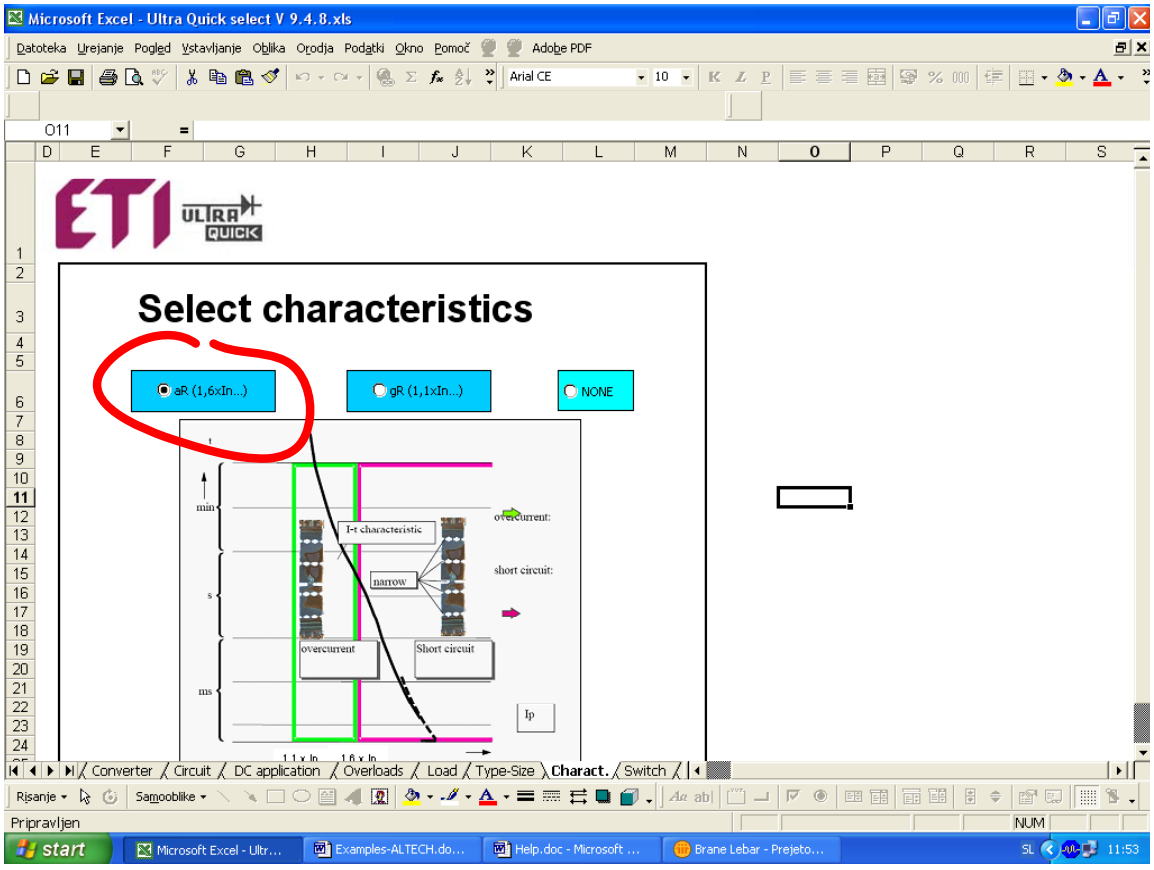
1.Chose the right fuse in the circuit Is?
2.For the same parameter when you use 2 fuses in paralel.

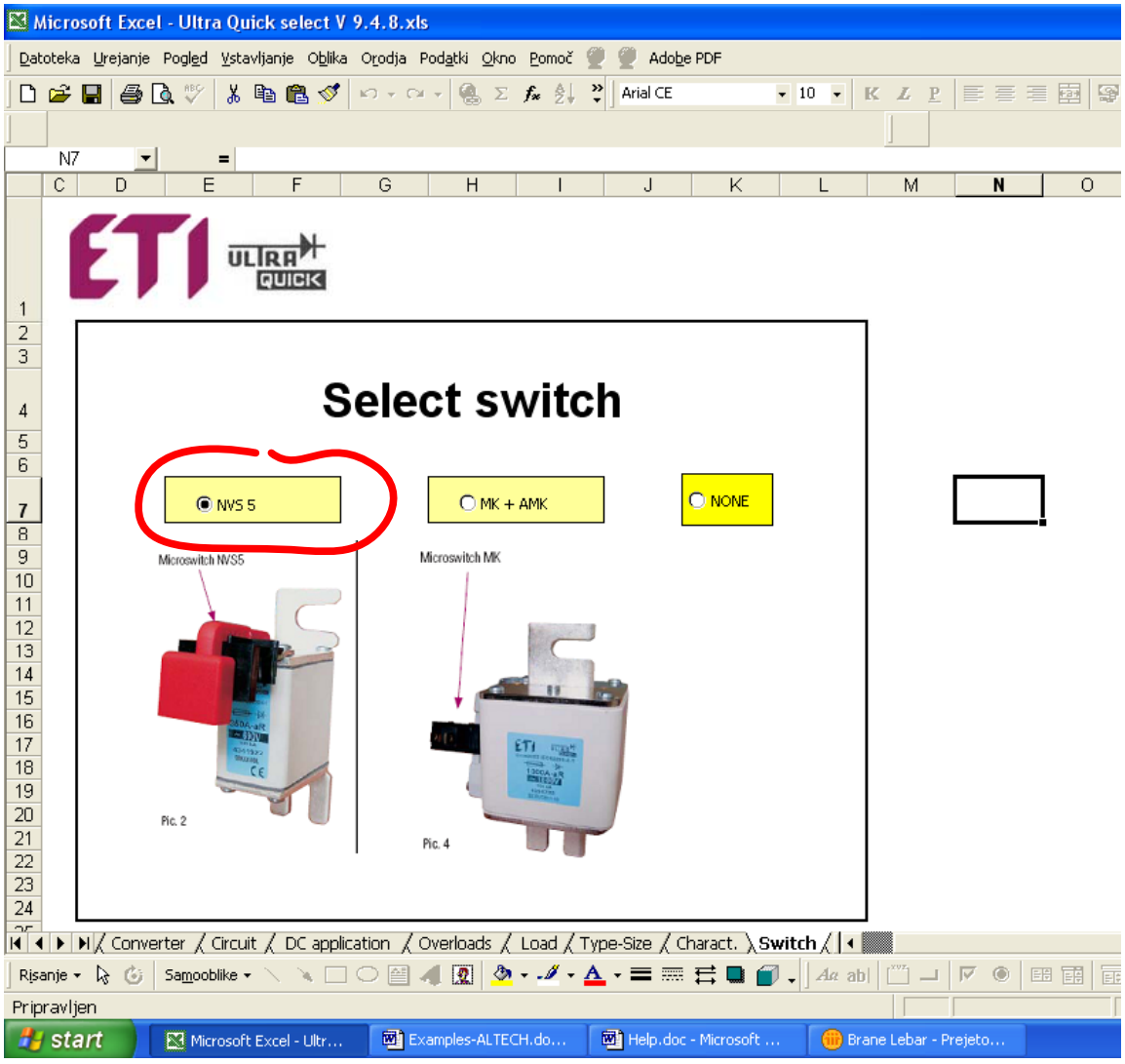

Microsoft Excel - Ultra Quick select V 9.4.7.xls
THREE PHASE FULL WAVE
ONE PHASE BRIDGE
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size

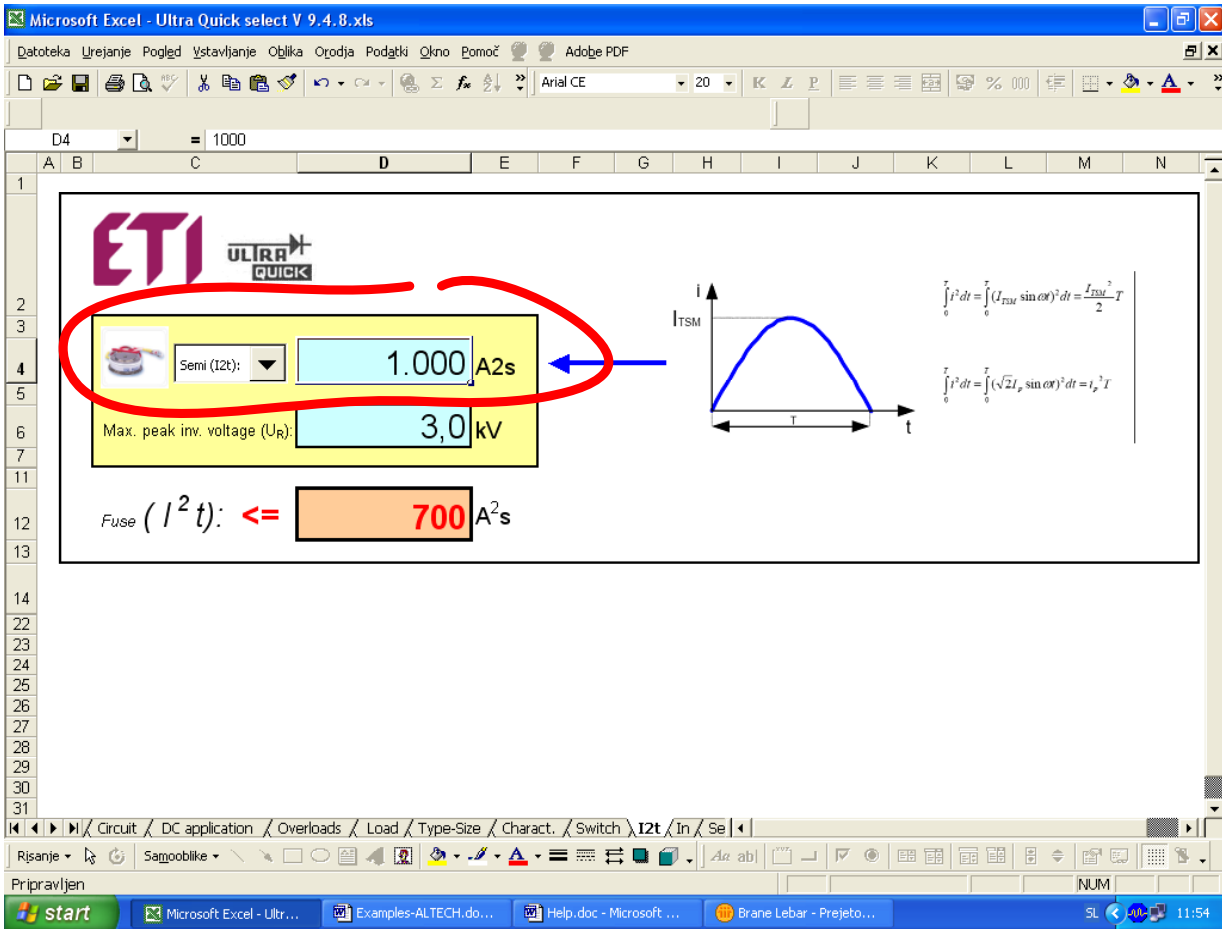

Microsoft Excel - Ultra Quick select V 9.4.7.xls
Manual/Circuit
Circuit:
input:
ISF:
100 A
U=:
100 V
Tr: 50 kVA
Z: 2 %
output:
Active
IS:
IS: 71 A~ US: 111 V~
ISF: 100 A~ UR: 157 V~
I=: 100 A= U=: 100 V=
Short-circuit current = 23 kA~
input:
US: 300 V~
Active
IS: 80 A~ UR: 1.000 V~
Break. cap. 50 kA~ U=: 400 V=
Help
Converter
Circuit
Overloads
Load
Type-Size

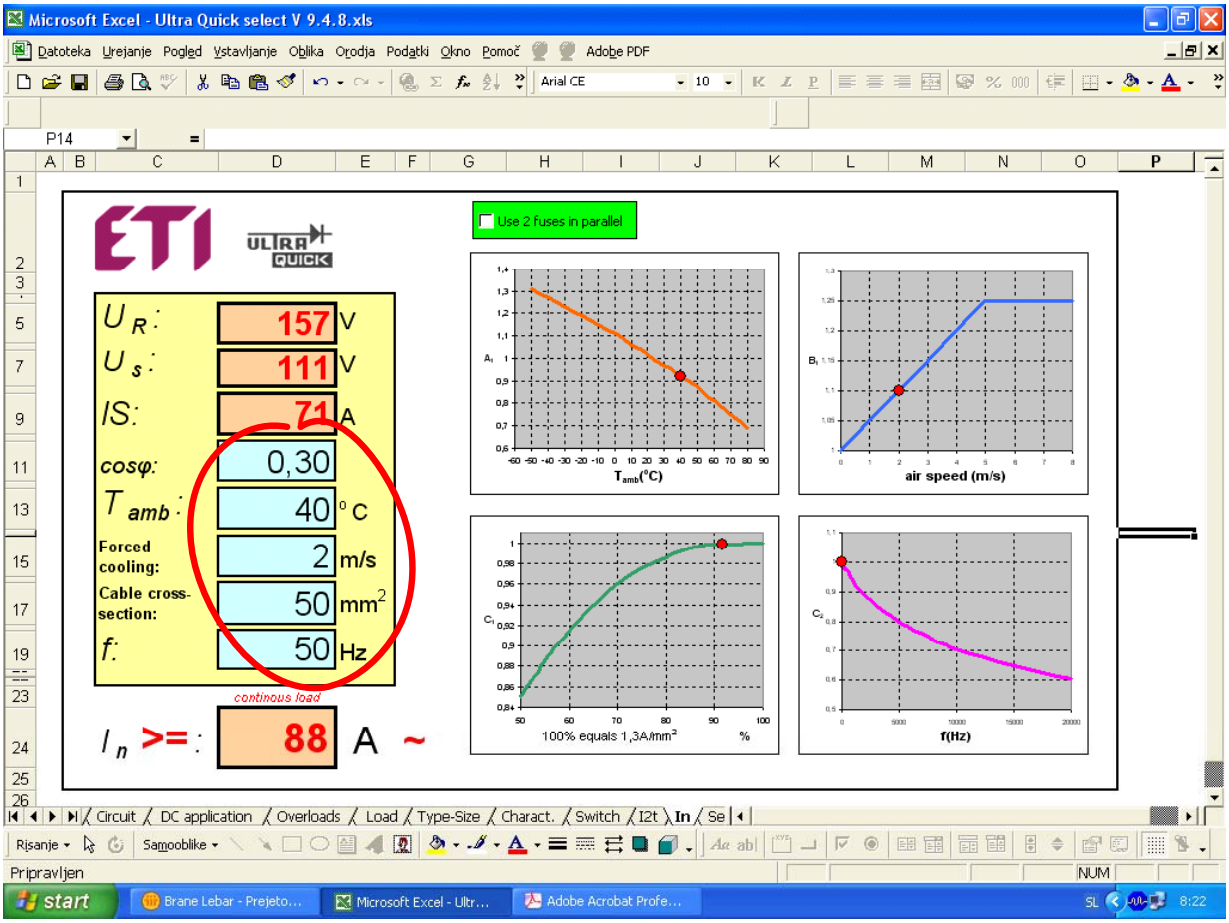

Microsoft Excel - Ultra Quick select V 9.4.7.xls
Continous load
Up to 12 stops per da
Cyclic load
I/t characteristics (catalogue page 46-77)
Number of overloads N:
2000
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Pripravljen

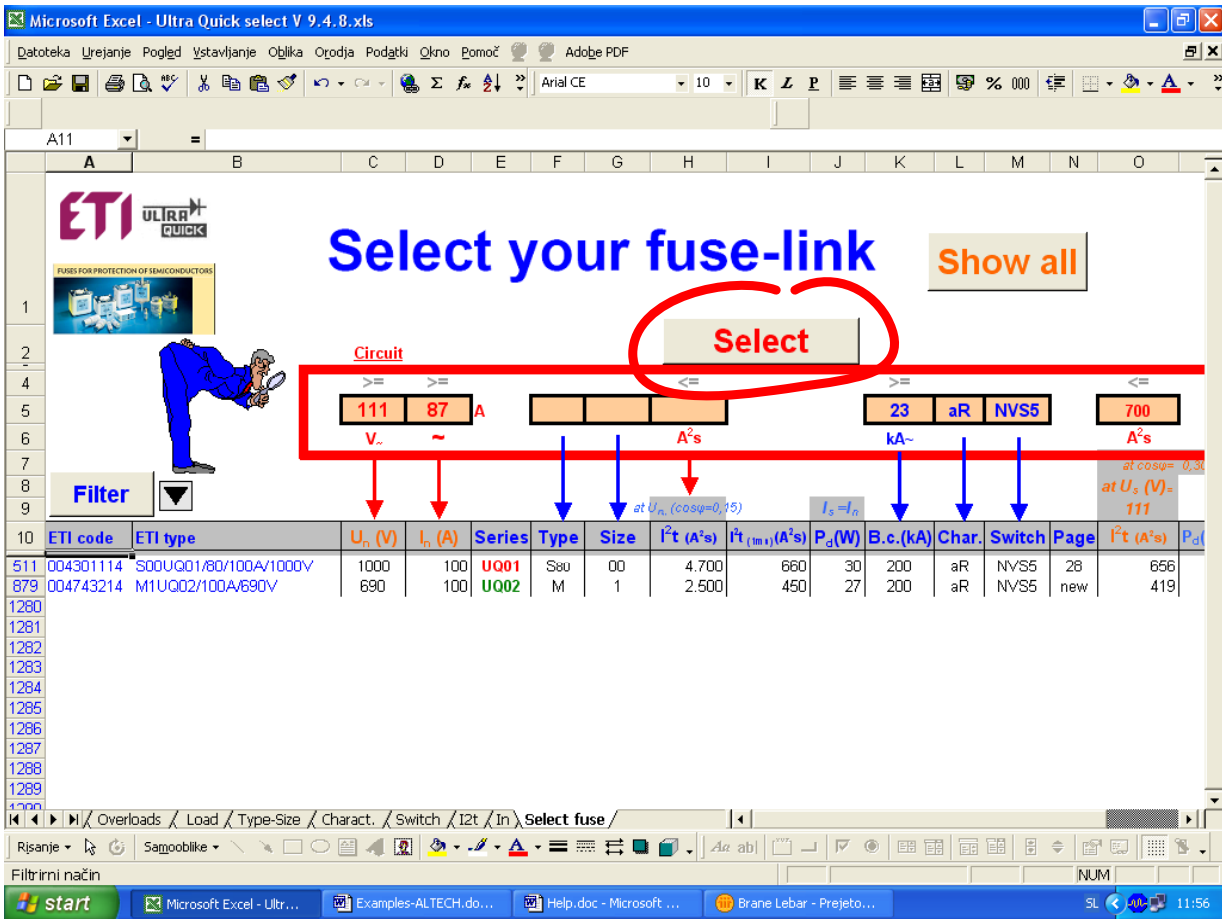

Microsoft Excel - Ultra Quick select V 9.4.8.xls
NONE
Select size
D - 500V
BS88
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Pripravljen

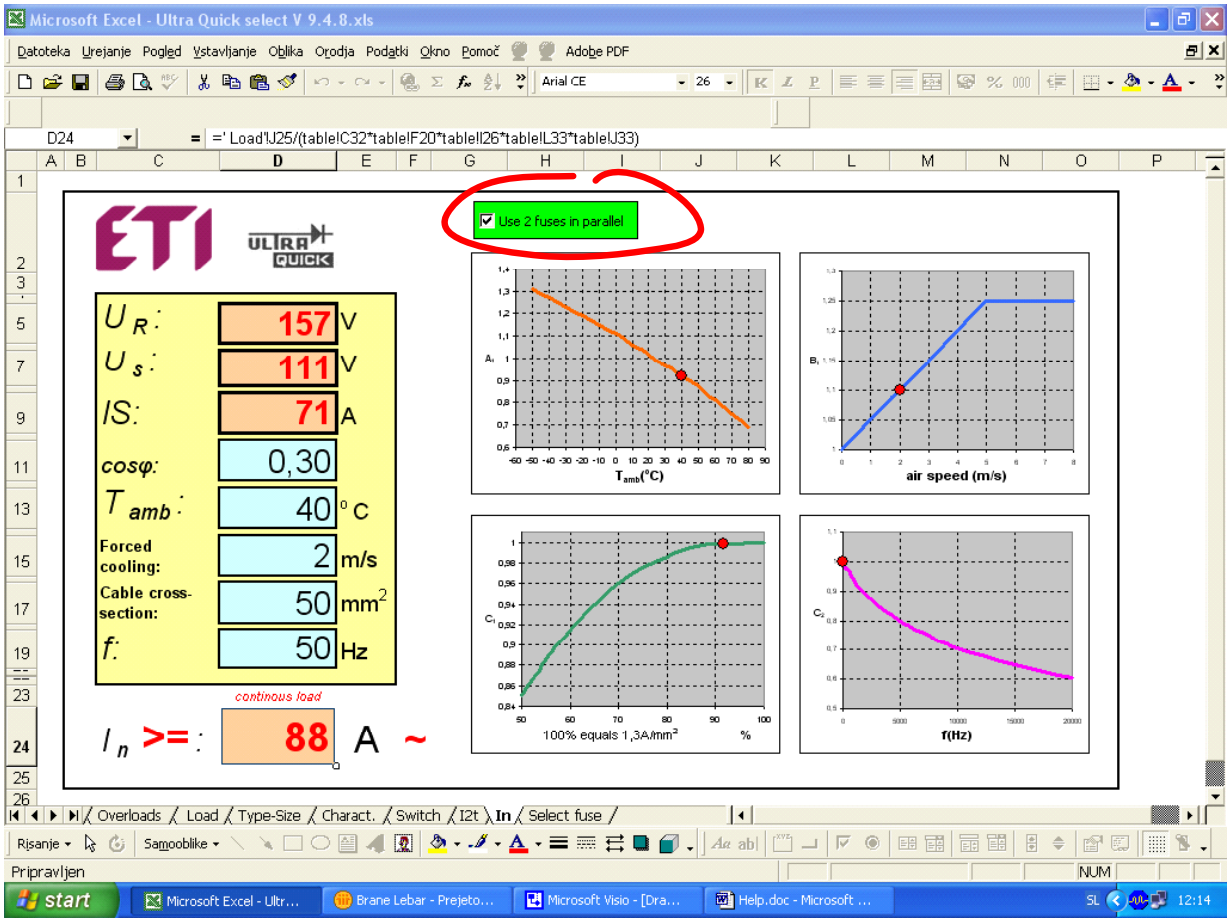

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select characteristics
gR (1,6xIn...)
gR (1,1xIn...)
NONE
t
min
s
ms
I-t characteristic
narrow
overcurrent
Short circuit
overcurrent:
short circuit:
Ip
1.1 x In
1.6 x In
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
Pripravljen

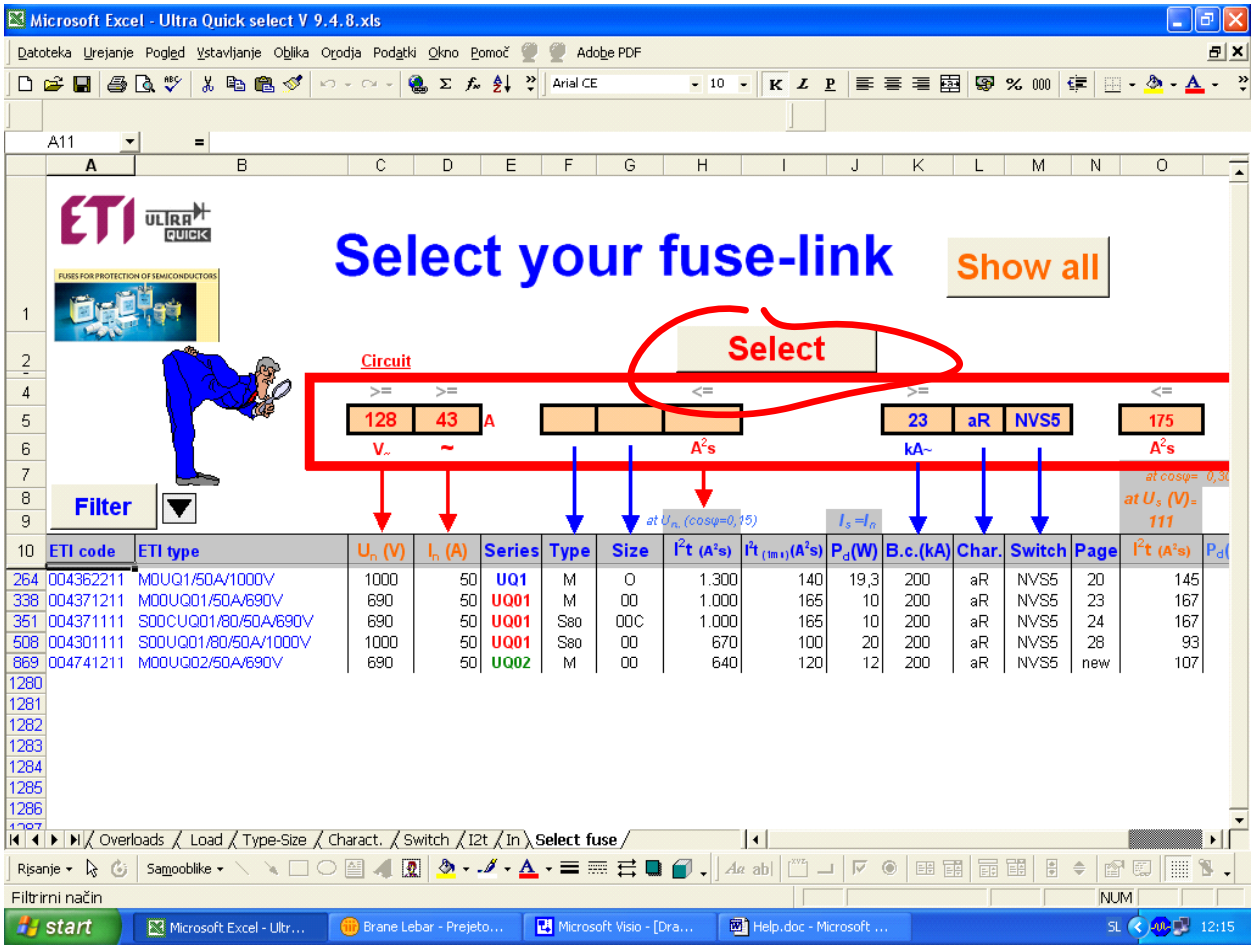

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select switch
NVS 5
MK + AMK
NONE
Microswitch NVS5
Microswitch MK
Pic. 2
Pic. 4
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
Pripravljen


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Semi (I2t):
1.000
A2s
Max. peak inv. voltage (UR):
3,0
kV
Fuse (I 2 t): <=
700
A2s
i
ITSM
T
t
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Se


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Use 2 fuses in parallel
UR:
157
V
Us:
111
V
IS:
71
A
cosφ:
0,30
T amb:
40
°C
Forced cooling:
2
m/s
Cable cross-section:
50
mm2
f:
50
Hz
continous load
In >=:
88
A ~
Tamb(°C)
air speed (m/s)
100% equals 1,3A/mm2
%
f(Hz)
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Se


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Circuit
111
87
A
V~
~
A²s
23
aR
NVS5
kA~
700
A²s
Filter
ETI code
ETI type
Un (V)
In (A)
Series
Type
Size
I²t (A²s)
I²t (1ms) (A²s)
Pd(W)
B.c.(kA)
Char.
Switch
Page
I²t (A²s)
511 004301114 S00UQ01/80/100A/1000V 1000 100 UQ01 S80 00 4.700 660 30 200 aR NVS5 28 656
879 004743214 M1UQ02/100A/690V 690 100 UQ02 M 1 2.500 450 27 200 aR NVS5 new 419
Overloads / Load / Type-Size / Charact. / Switch / I2t / In / Select fuse /
Filtrirni način
NUM
start
Microsoft Excel - Ultr...
Examples-ALTECH.do...
Help.doc - Microsoft ...
Brane Lebar - Prejeto...
SL 11:56

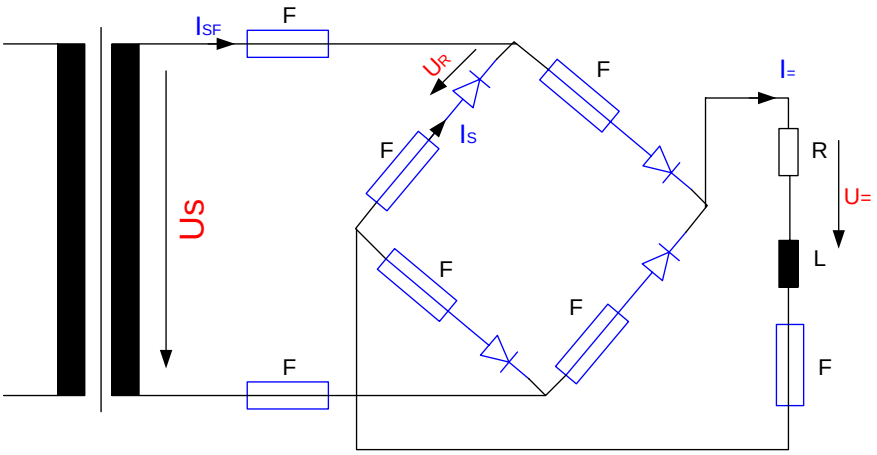

Microsoft Excel - Ultra Quick select V 9.4.8.xls
D24
='Load'!J25/(tableIC32*tableIF20*tableII26*tableIL33*tableIJ33)
Use 2 fuses in parallel
UR: 157 V
Us: 111 V
IS: 71 A
cosφ: 0,30
Tamb: 40 °C
Forced cooling: 2 m/s
Cable cross-section: 50 mm²
f: 50 Hz
continous load
In >=: 88 A ~
Tamb(°C)
air speed (m/s)
100% equals 1,3A/mm²
%
f(Hz)
Overloads / Load / Type-Size / Charact. / Switch / I2t / In / Select fuse /
Pripravljen
NUM
start
Microsoft Excel - Ultr...
Brane Lebar - Prejeto...
Microsoft Visio - [Dra...
Help.doc - Microsoft ...
SL 12:14



	ETI code	ETI type	U_n (V)	I_n (A)	Series	Type	Size	I^2t (A^2s)	$I^2t_{(1ms)}$ (A^2s)	P_d (W)	B.c.(kA)	Char.	Switch	Page	I^2t (A^2s)
264	004362211	M0UQ1/50A/1000V	1000	50	UQ1	M	0	1.300	140	19,3	200	aR	NVS5	20	145
338	004371211	M00UQ01/50A/690V	690	50	UQ01	M	00	1.000	165	10	200	aR	NVS5	23	167
351	004371111	S00CUQ01/80/50A/690V	690	50	UQ01	S80	00C	1.000	165	10	200	aR	NVS5	24	167
508	004301111	S00UQ01/80/50A/1000V	1000	50	UQ01	S80	00	670	100	20	200	aR	NVS5	28	93
869	004741211	M00UQ02/50A/690V	690	50	UQ02	M	00	640	120	12	200	aR	NVS5	new	107

Example Nr. 2:

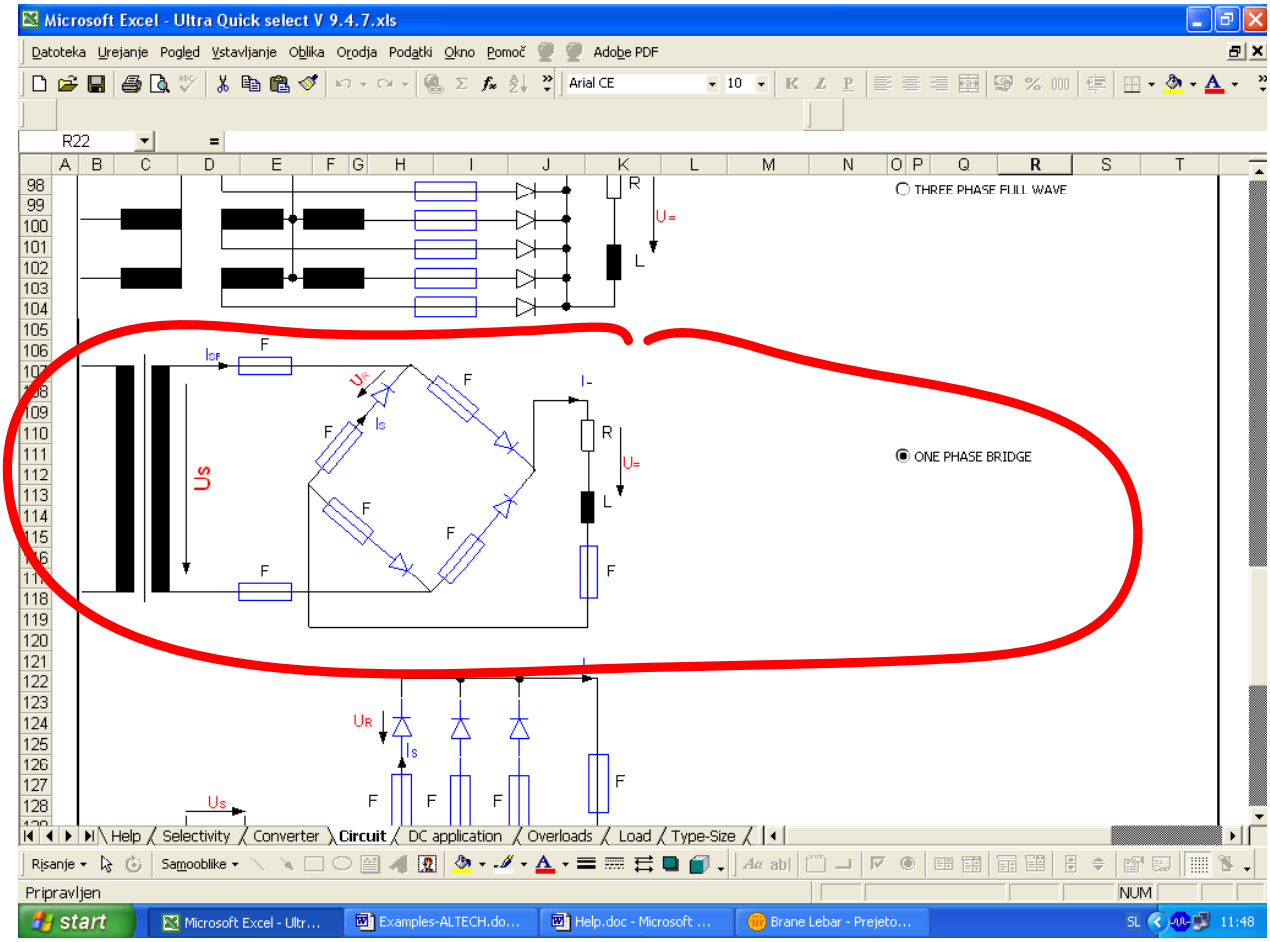
We have ONE PHASE BRIDGE with the next circuit:

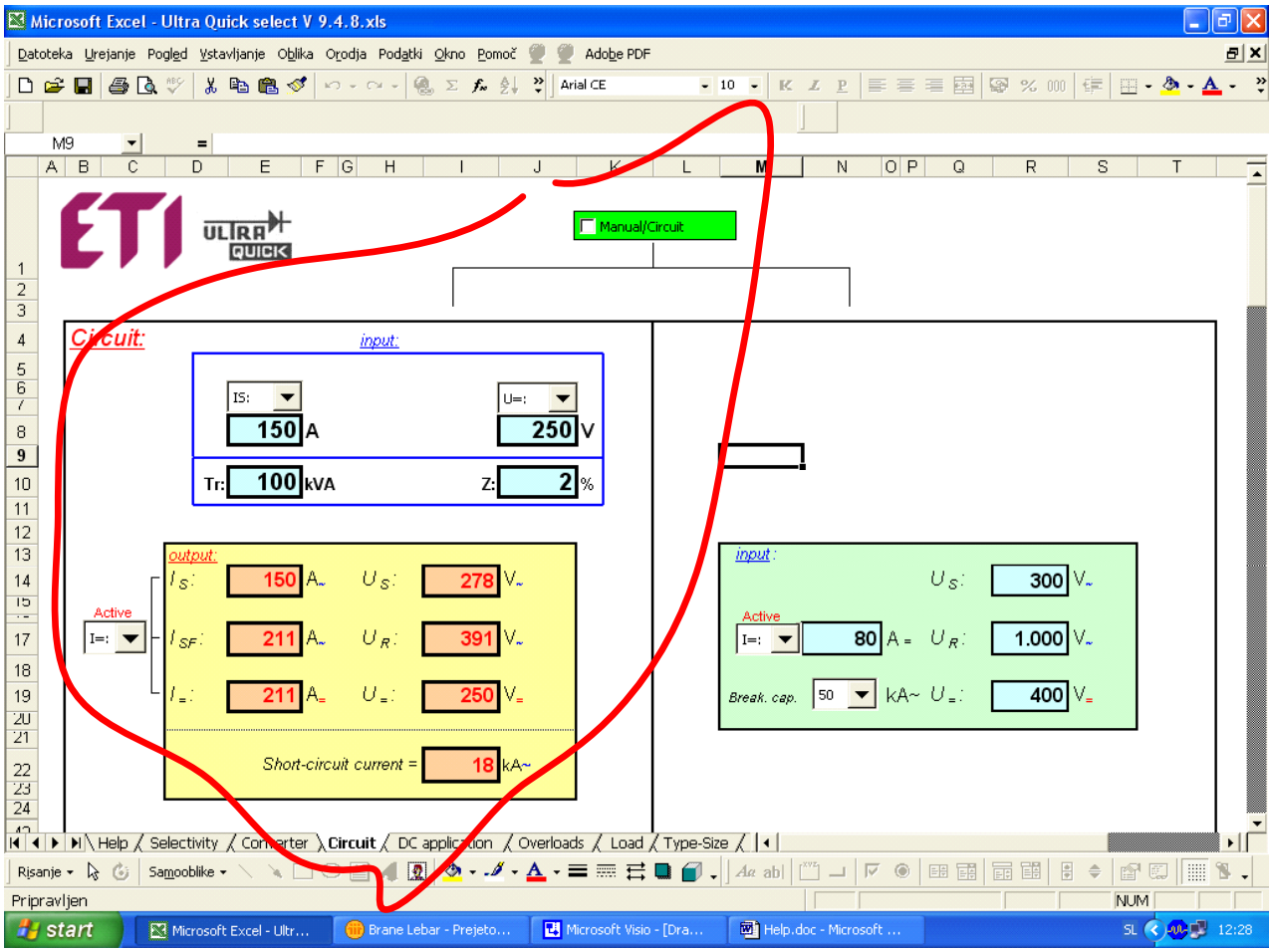


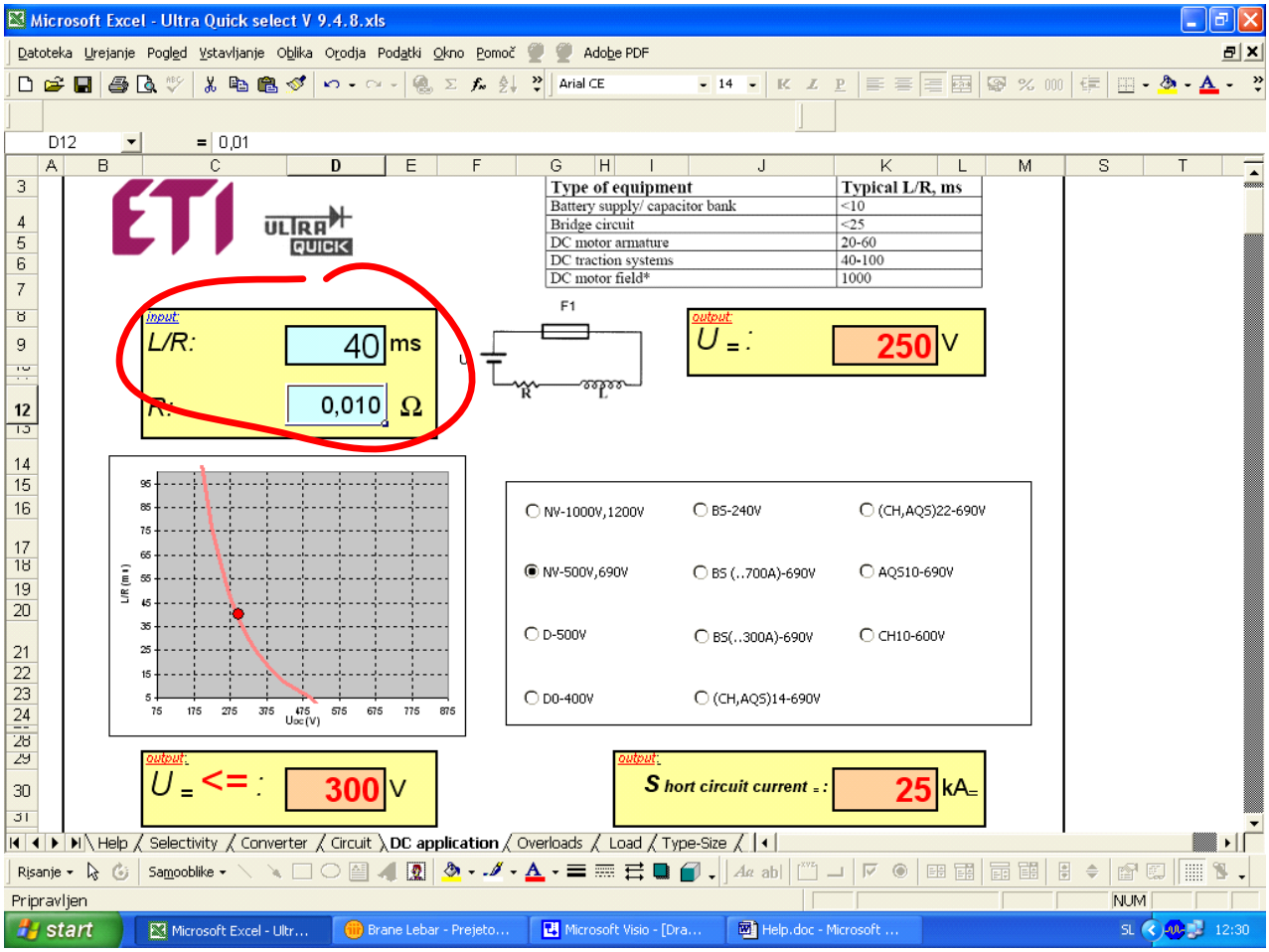
I_S=150A, continous load/12 stops per day
$U_=$ =250V DC
I^2t (diode)=100.000A^2s
Transformer power=100kVA
Transformer impendance=2%

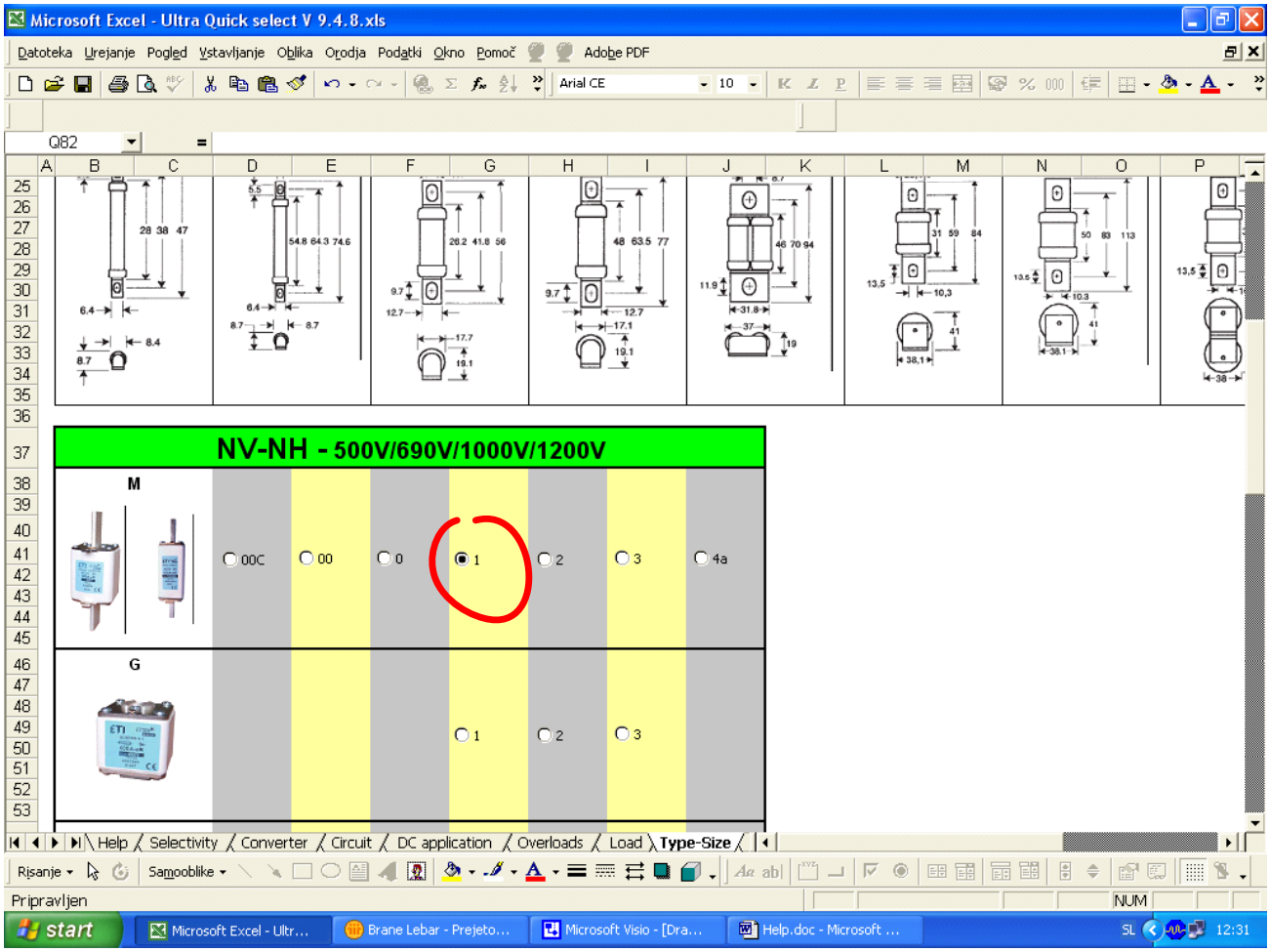
L/R=40ms
R=0,01 Ohm
COS fi=0,5
T_{amb}=60 deg. C
Fan=0m/s
Cable cross section=150mm^2
Frequency=50Hz
Type-size= M1 ???

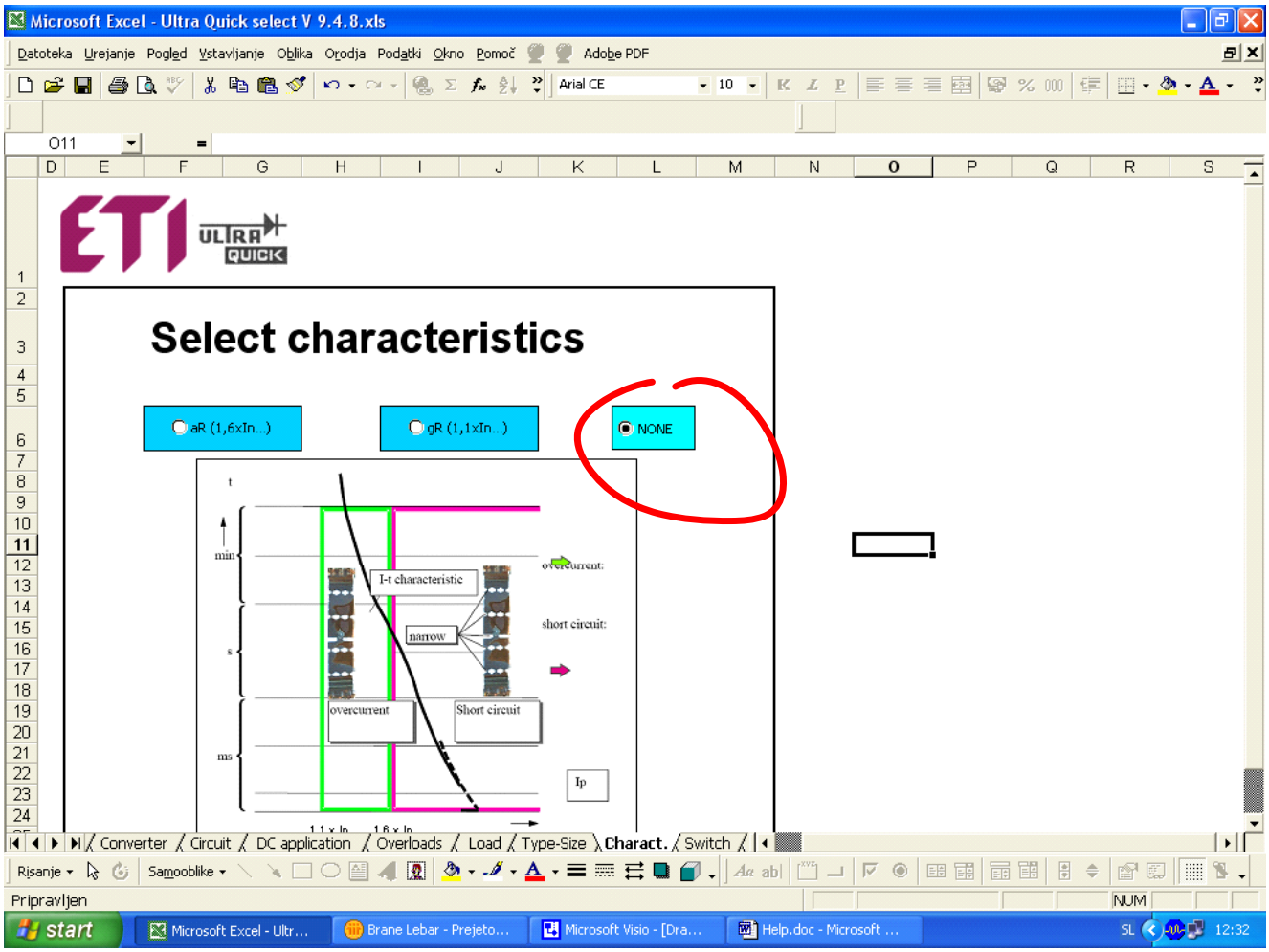
1.Choose the right fuse in the DC circuit I=?

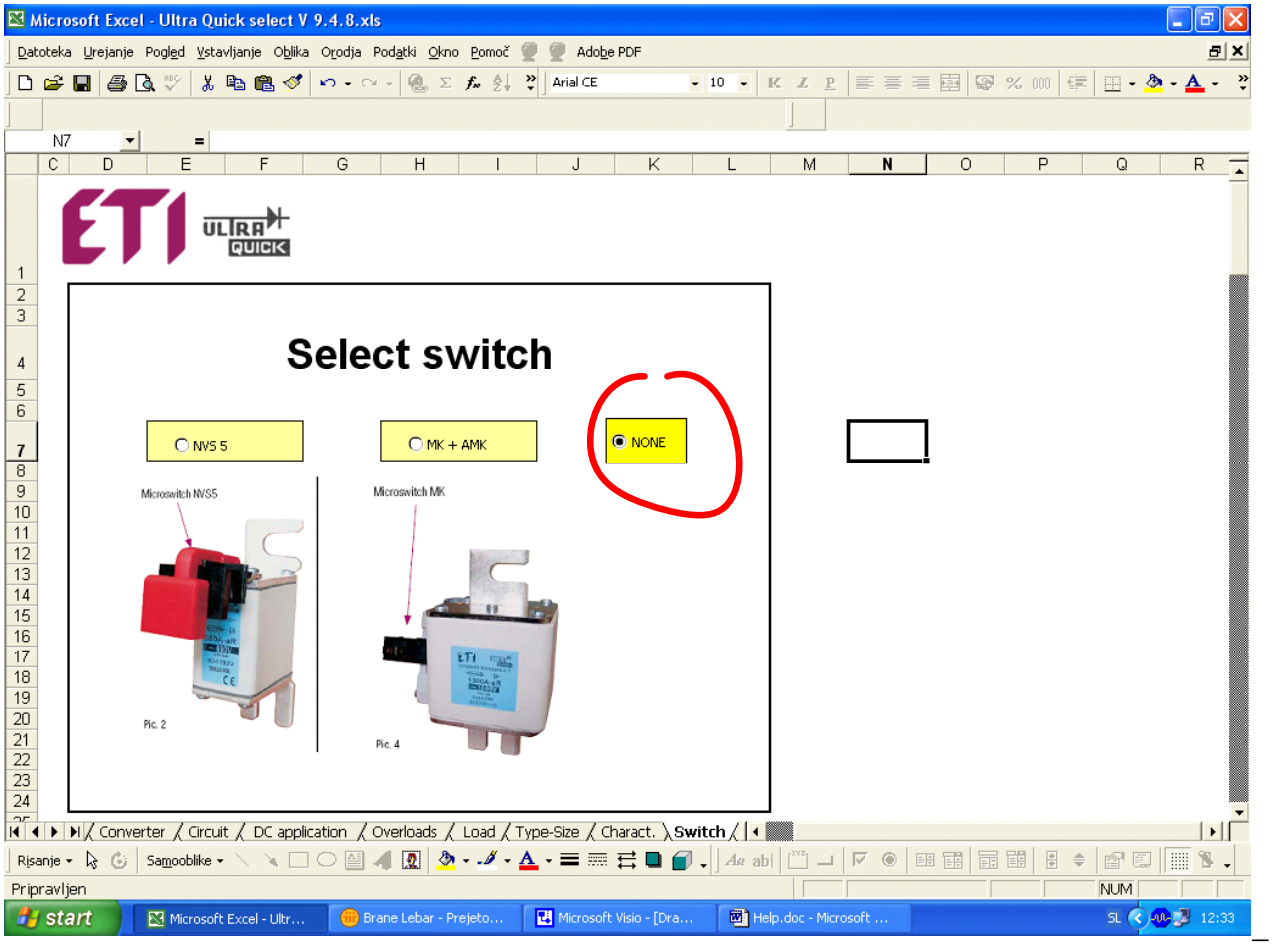

Microsoft Excel - Ultra Quick select V 9.4.7.xls
THREE PHASE FULL WAVE
ONE PHASE BRIDGE
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size

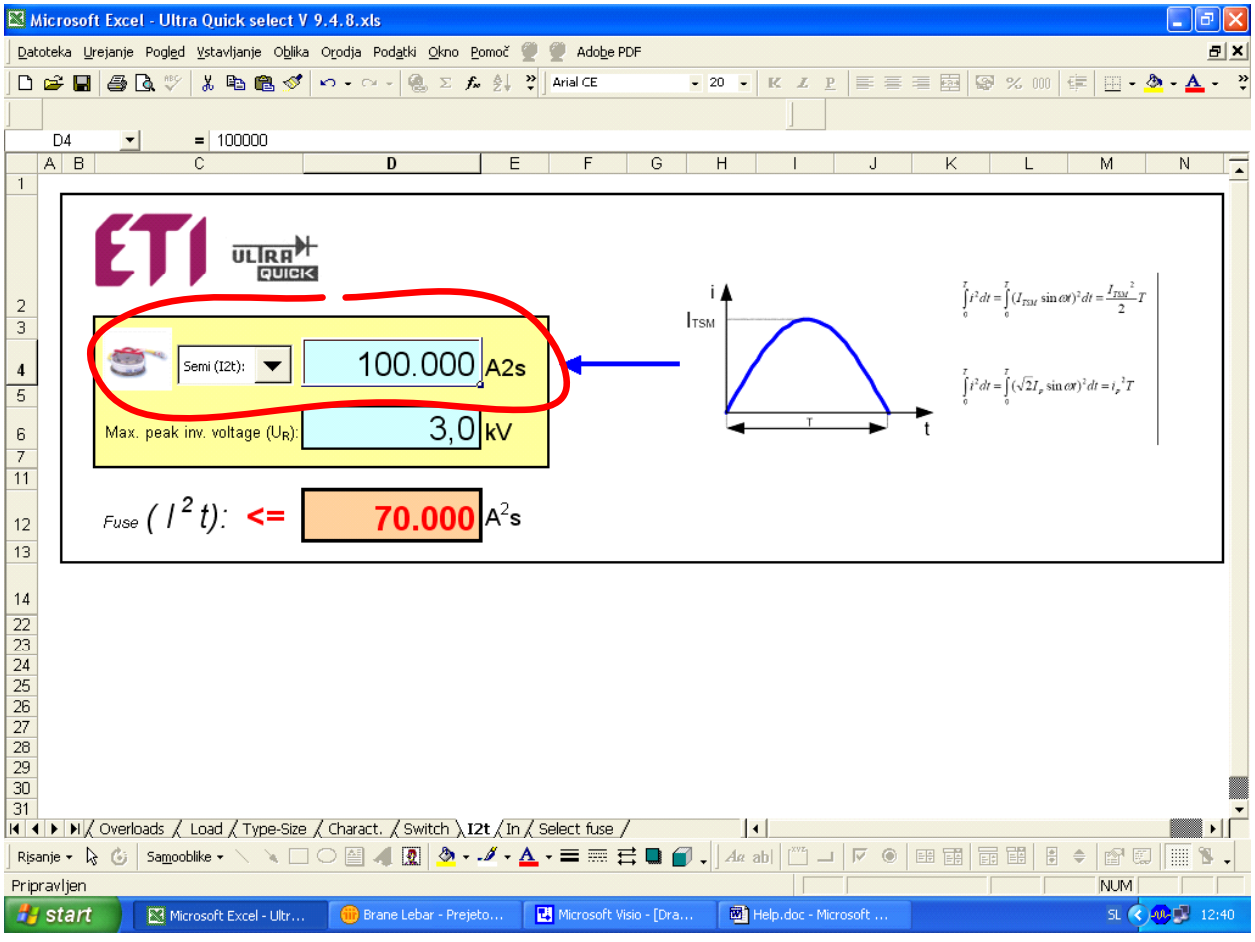

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Manual/Circuit
Circuit:
input:
IS:
150 A
U=:
250 V
Tr: 100 kVA
Z: 2 %
output:
Active
I=:
150 A~
278 V~
211 A~
391 V~
211 A=
250 V=
Short-circuit current = 18 kA~
input:
300 V~
Active
I=:
80 A=
1.000 V~
Break. cap.
50 kA~
400 V=
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size

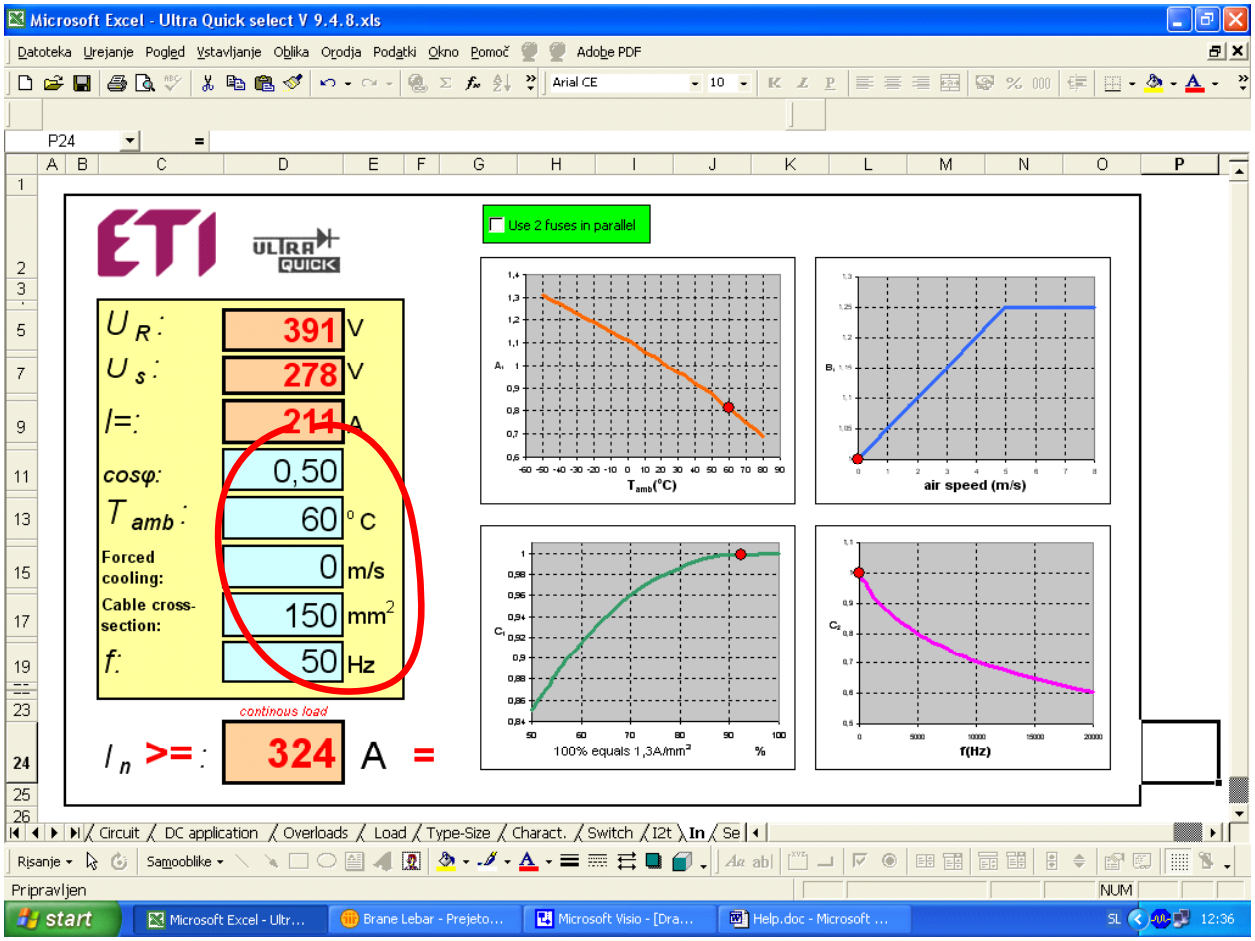

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Type of equipment
Typical L/R, ms
Battery supply/ capacitor bank
<10
Bridge circuit
<25
DC motor armature
20-60
DC traction systems
40-100
DC motor field*
1000
input:
L/R:
40
ms
R:
0,010
Ω
F1
output:
U = :
250
V
NV-1000V,1200V
BS-240V
(CH,AQS)22-690V
NV-500V,690V
BS (..700A)-690V
AQS10-690V
D-500V
BS(..300A)-690V
CH10-600V
D0-400V
(CH,AQS)14-690V
output:
U = <= :
300
V
output:
S hort circuit current = :
25
kA
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Pripravljen
start
Microsoft Excel - Ultr...
Brane Lebar - Prejeto...
Microsoft Visio - [Dra...
Help.doc - Microsoft ...
12:30

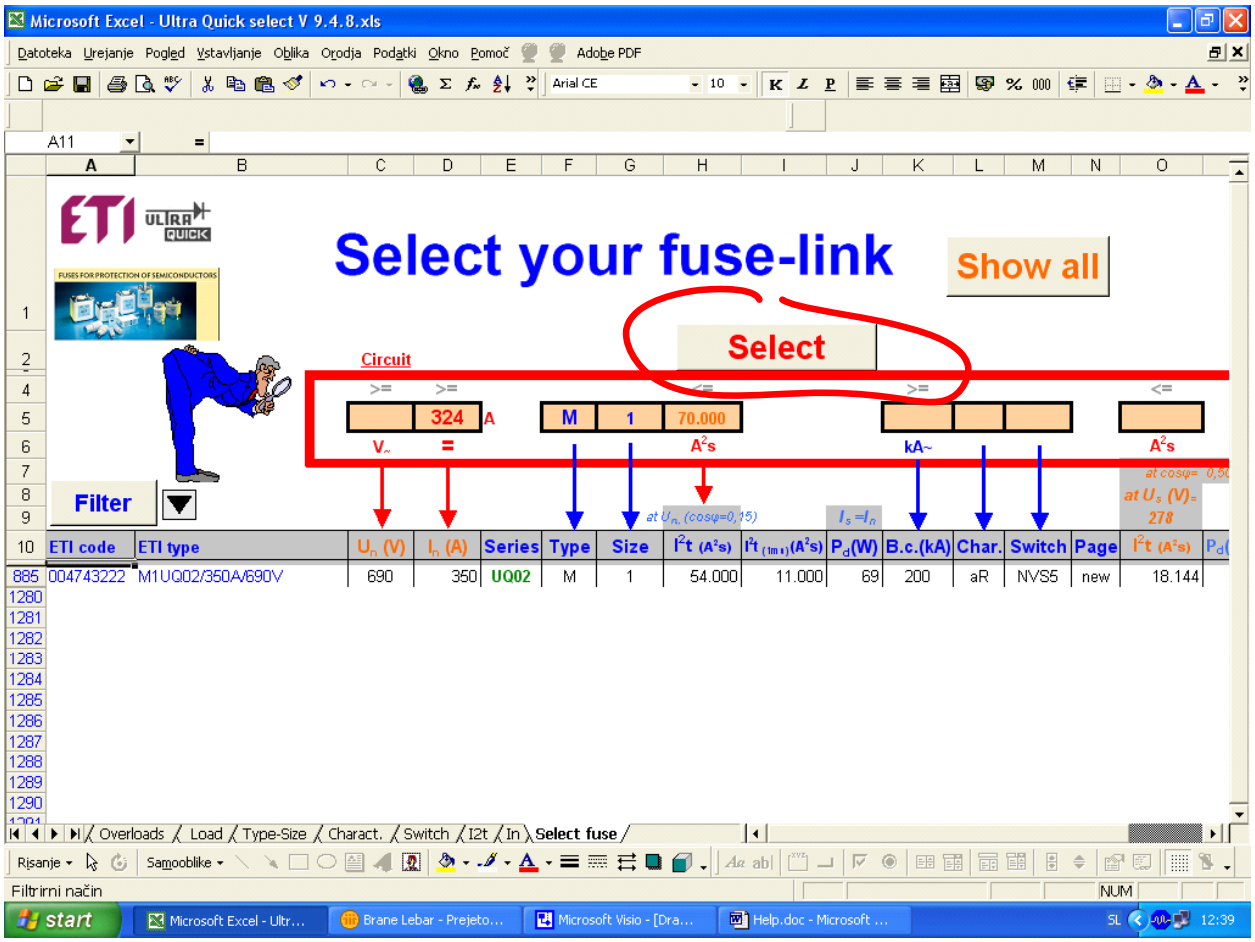

Microsoft Excel - Ultra Quick select V 9.4.8.xls
NV-NH - 500V/690V/1000V/1200V
M
00C
00
0
1
2
3
4a
G
1
2
3
Help
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size


Microsoft Excel - Ultra Quick select V 9.4.8.xls
ULTRA QUICK
Select characteristics
aR (1,6xIn...)
gR (1,1xIn...)
NONE
I-t characteristic
narrow
overcurrent
Short circuit
overcurrent:
short circuit:
Ip
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select switch
NVS 5
MK + AMK
NONE
Microswitch NVS5
Pic. 2
Microswitch MK
Pic. 4
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Semi (I2t):
100.000
A2s
Max. peak inv. voltage (UR):
3,0
kV
Fuse (I 2 t): <=
70.000
A2s
ITSM
i
t
T
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse

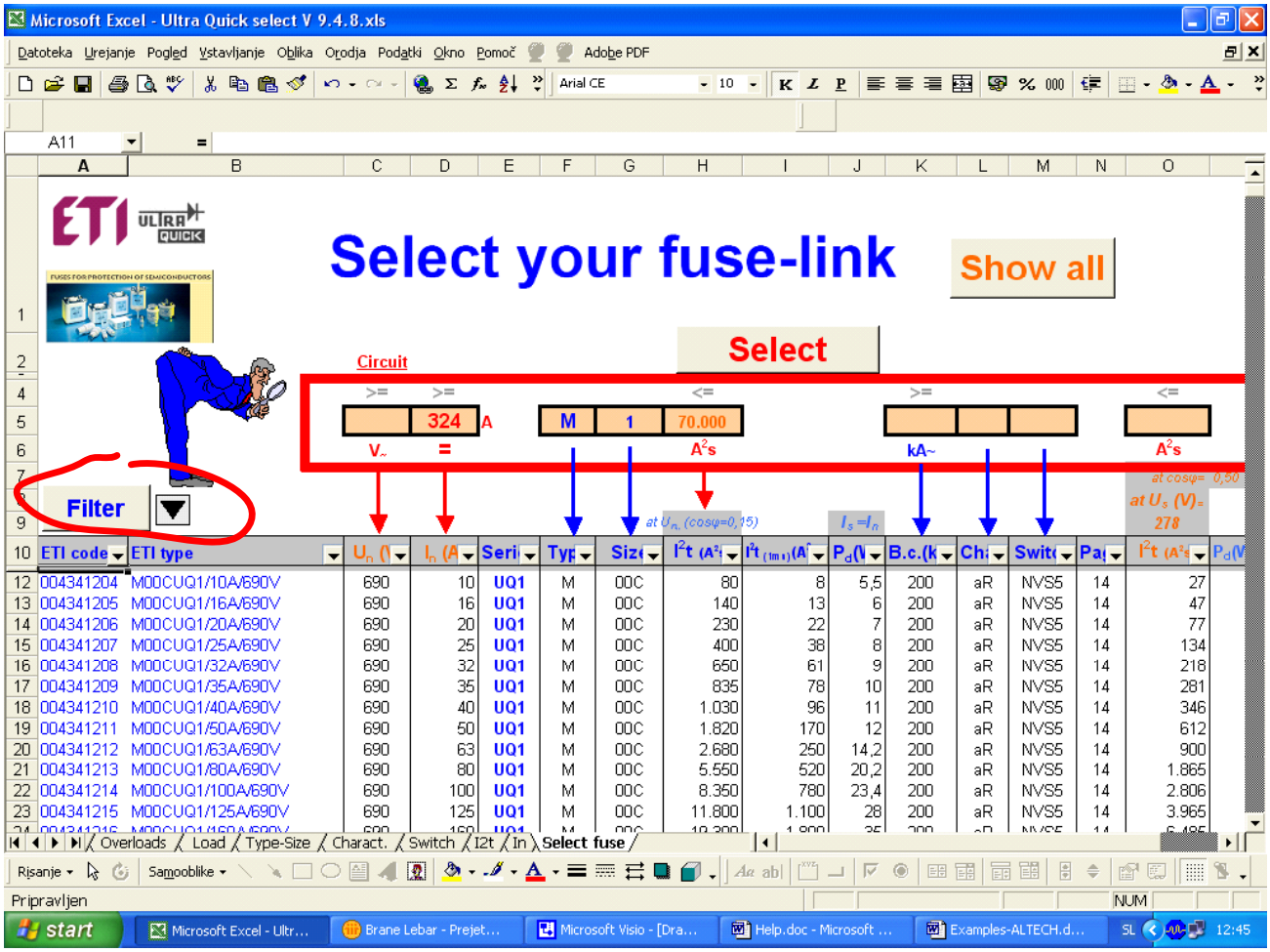

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Use 2 fuses in parallel
U R : 391 V
U s : 278 V
I=: 214 A
cosφ: 0,50
T amb : 60 °C
Forced cooling: 0 m/s
Cable cross-section: 150 mm2
f: 50 Hz
continous load
I n >= : 324 A =
T amb(°C)
air speed (m/s)
100% equals 1,3A/mm2
%
f(Hz)
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Se
Pripravljen
start
12:36

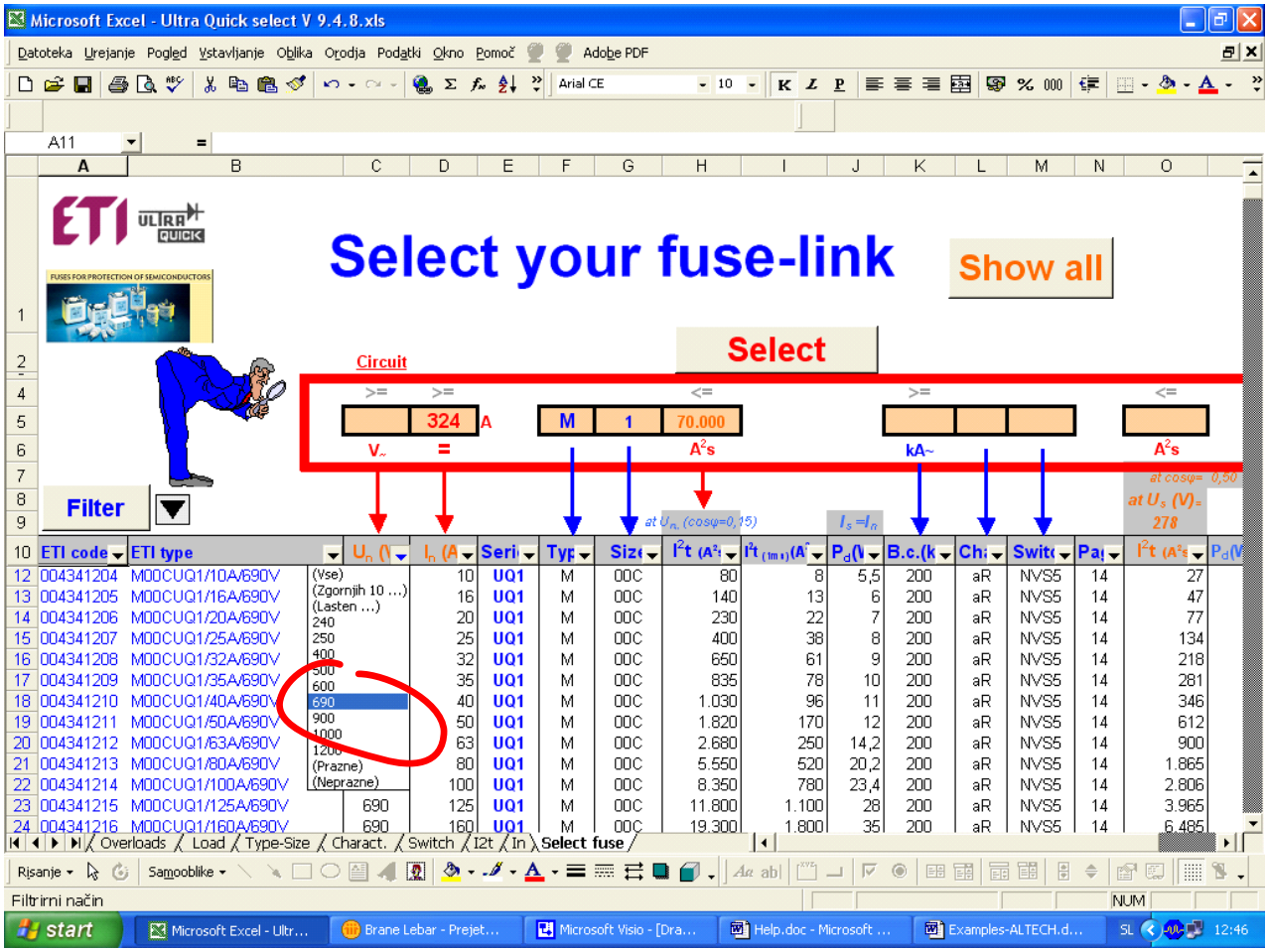

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Circuit
324 A
M 1 70.000
Filter
ETI code ETI type Un (V) In (A) Series Type Size I2t (A2s) I2t (ma)(A2s) Pd(W) B.c.(kA) Char. Switch Page I2t (A2s)
885 004743222 M1UQ02/350A/690V 690 350 UQ02 M 1 54.000 11.000 69 200 aR NVS5 new 18.144
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse
Filtrirni način
start
12:39

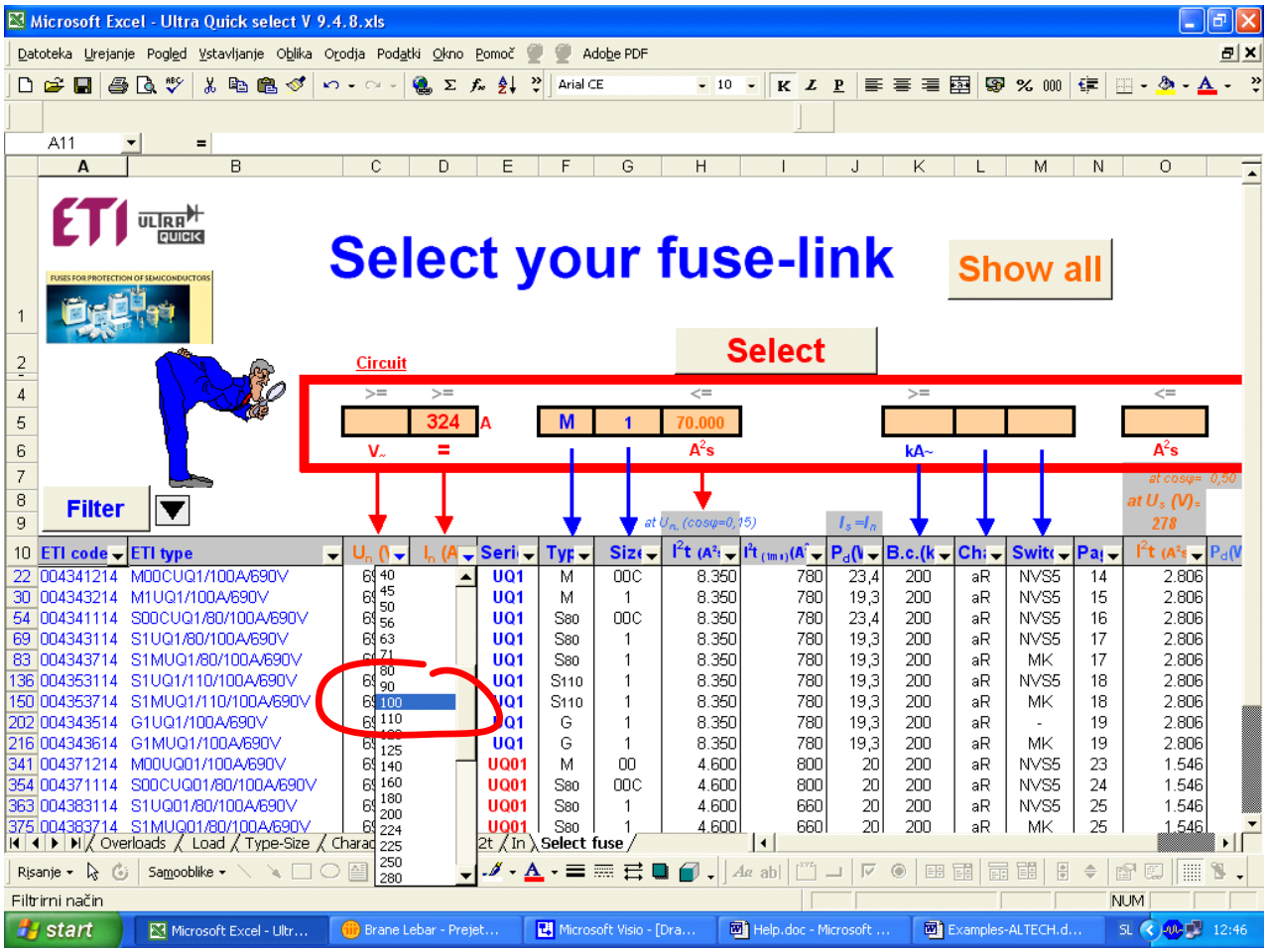
Example Nr. 3:

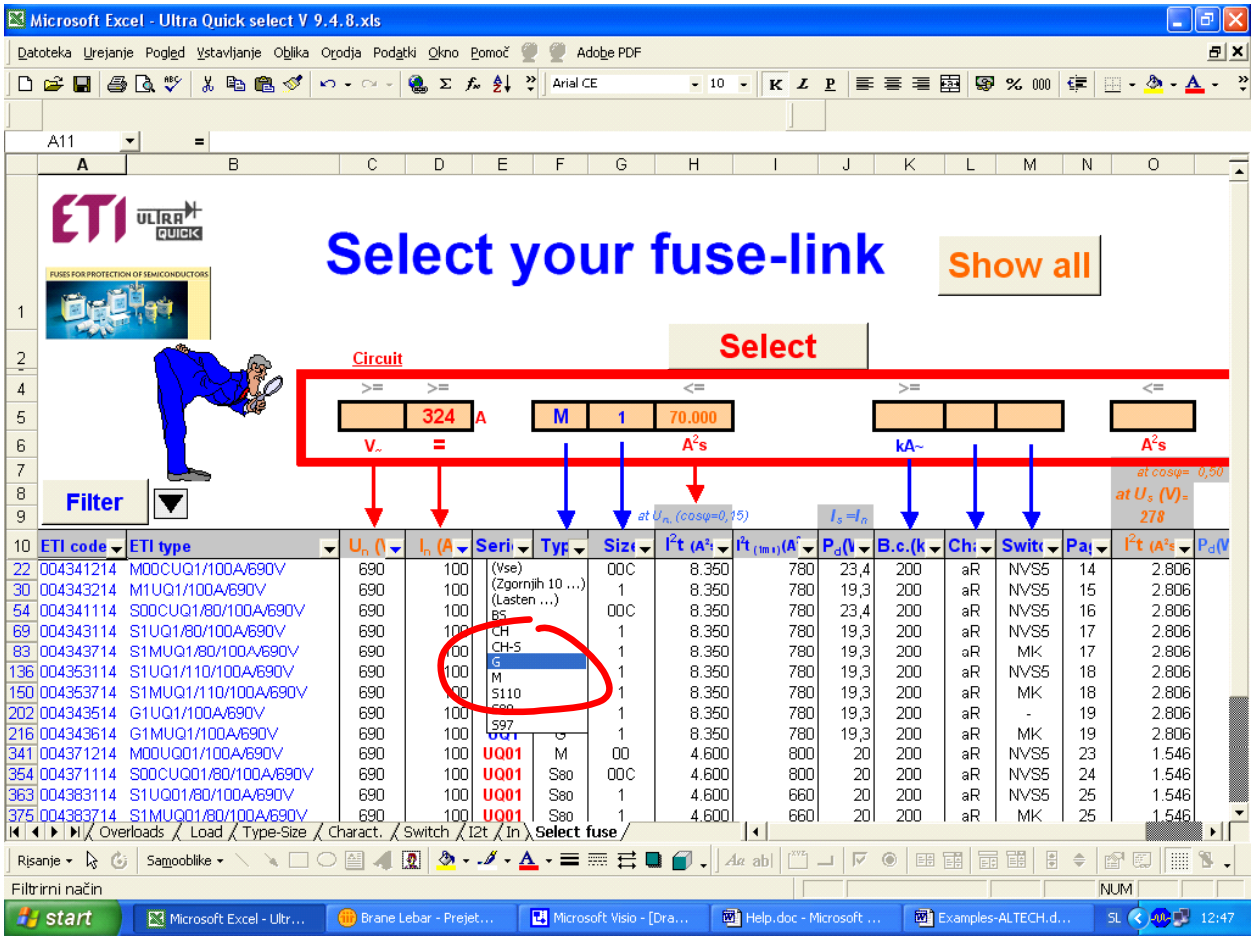
Choose the right fuse manualy by useing **Filter** button.

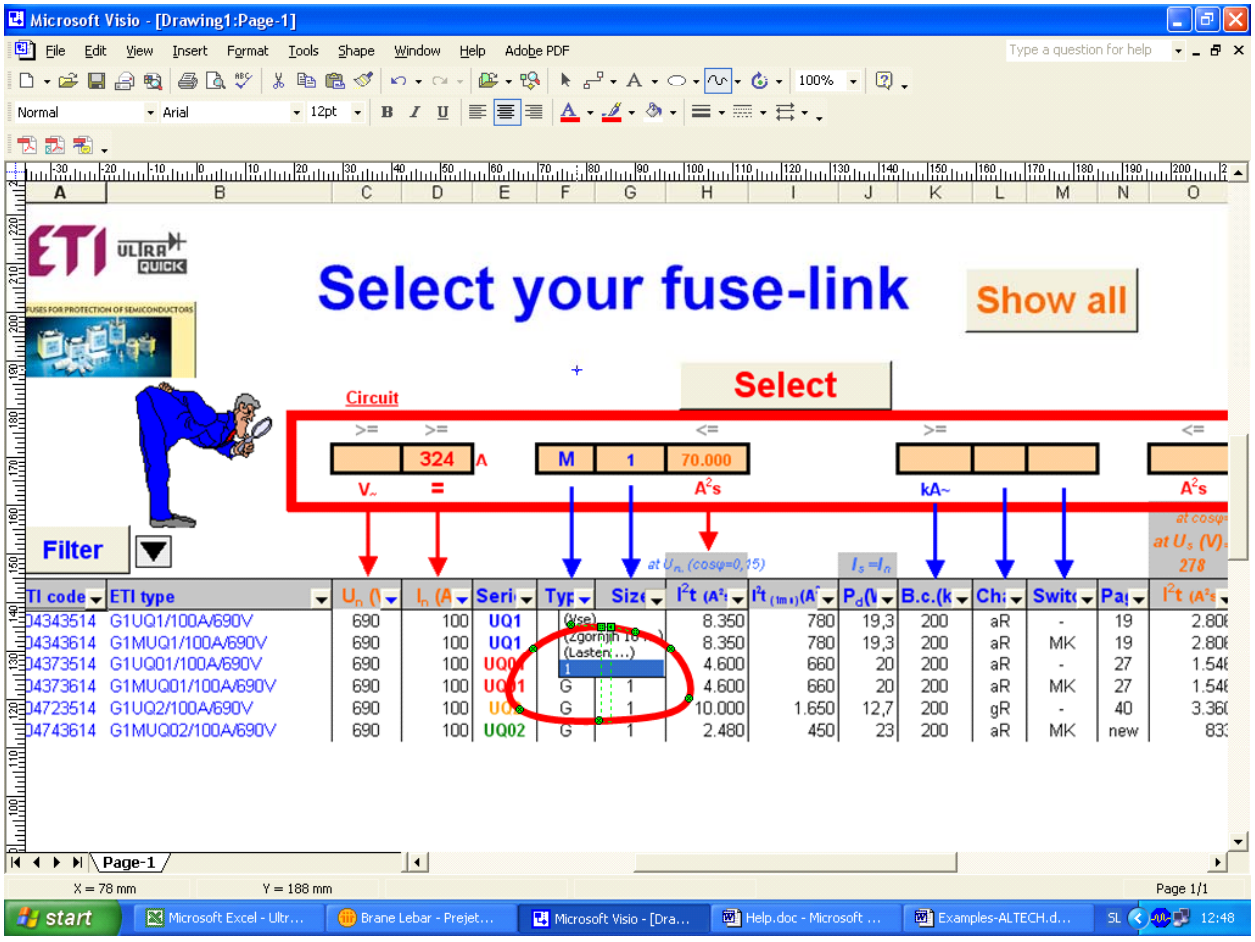
Un=690V
In=100A
Type=G
Size=1
I^2t <3000A^2s

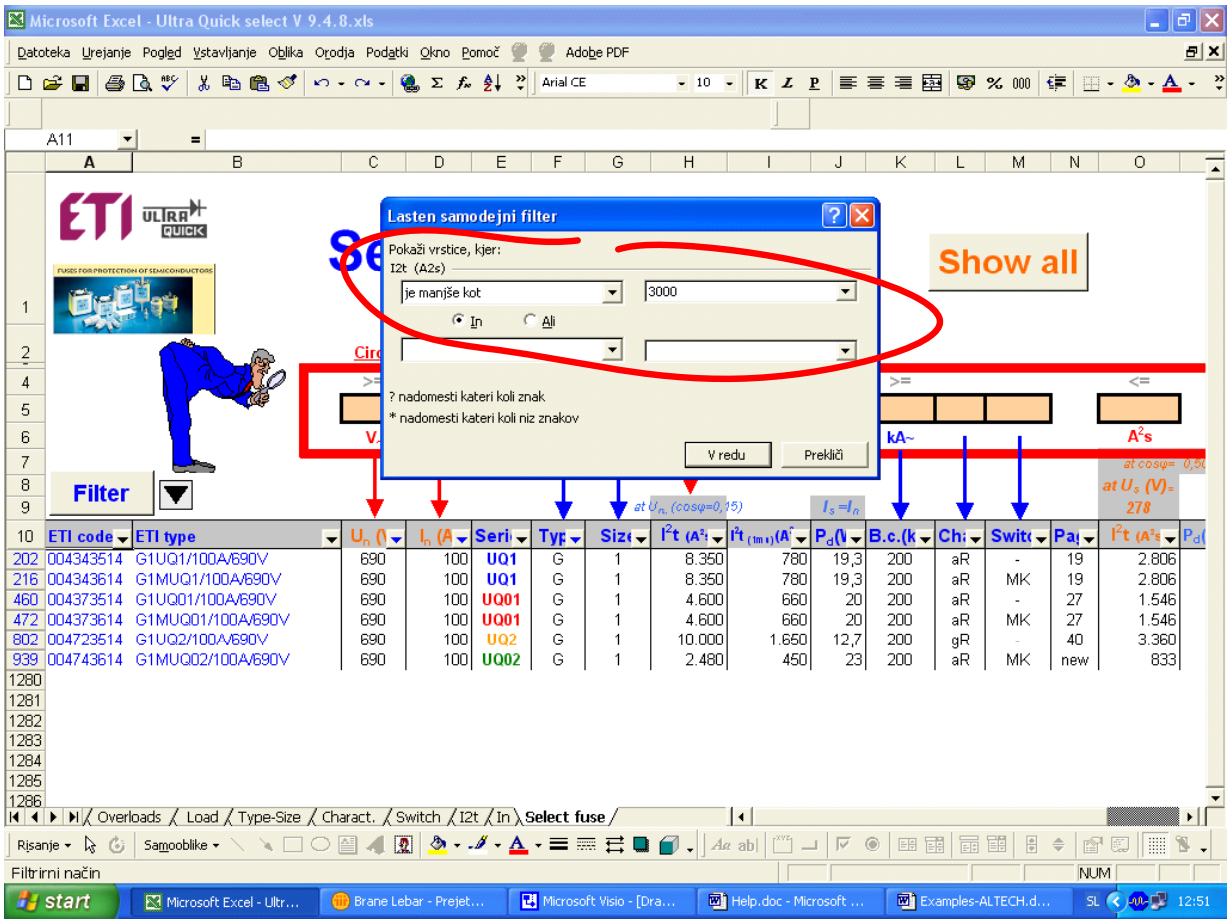


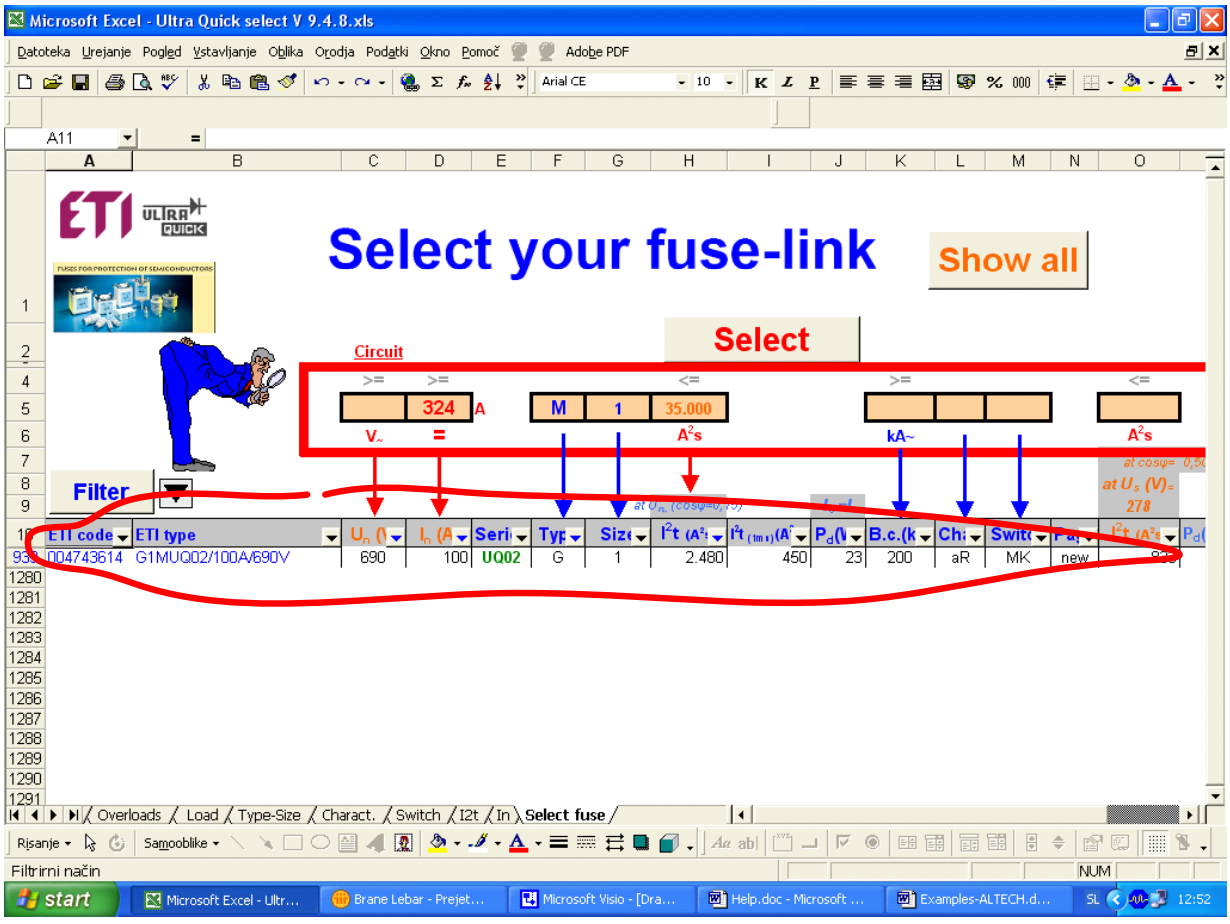

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Circuit
Filter
324
70.000
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Circuit
Filter
324
70.000
Overloads
Load
Type-Size
Select fuse


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Circuit
Filter
324
M
1
70.000
ETI code
ETI type
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse


Microsoft Visio - [Drawing1:Page-1]
Select your fuse-link
Show all
Select
Circuit
Filter
324
M
1
70.000
Page-1


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Lasten samodejni filter
Pokaži vrstice, kjer:
I2t (A2s)
je manjše kot
3000
In
Ali
? nadomesti kateri koli znak
* nadomesti kateri koli niz znakov
V redu
Prekliči
Show all
Filter
ETI code
ETI type
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Circuit
324
A
M
1
35.000
Filter
ETI code
ETI type
004743614
G1MUQ02/100A/690V
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse

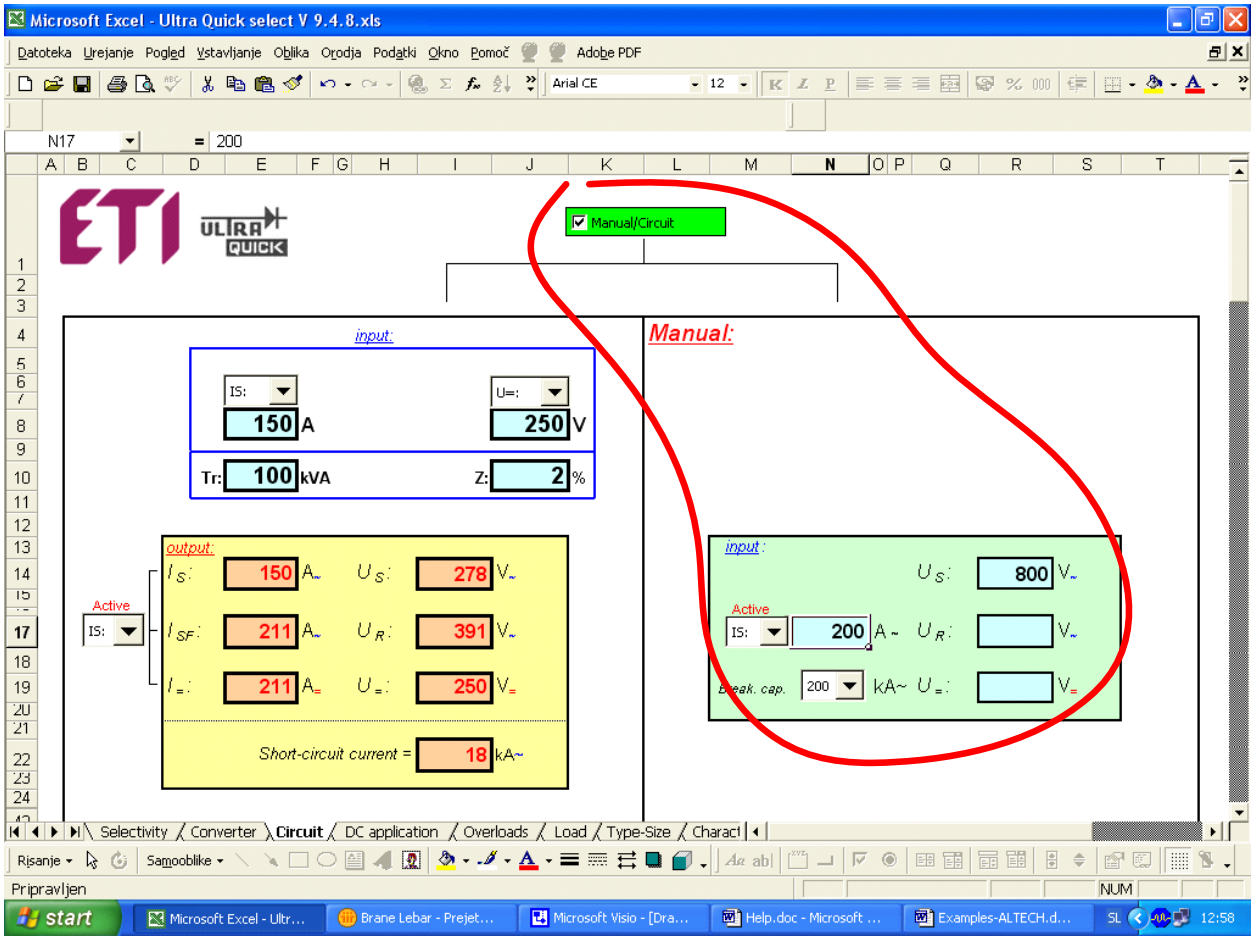
Example Nr. 4:

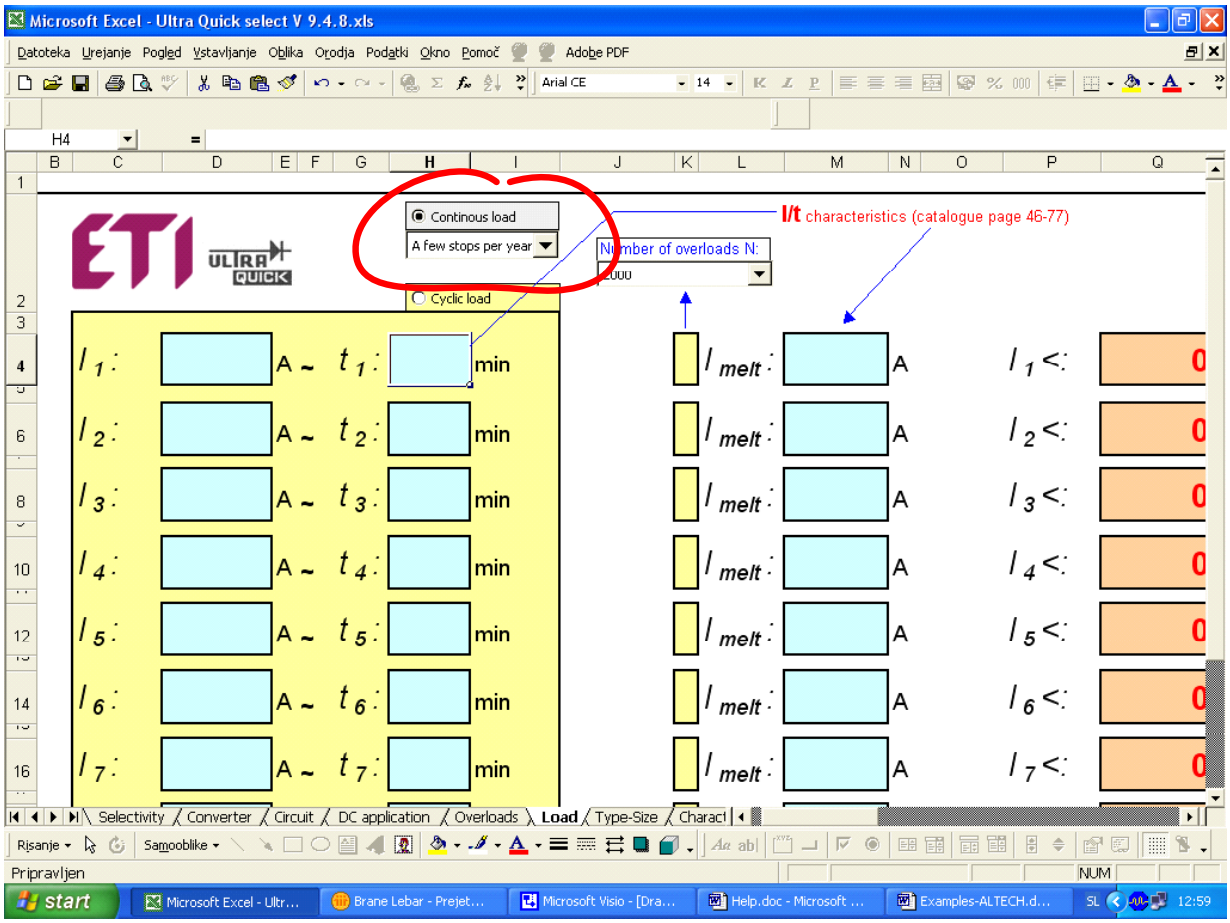
We have the next data:

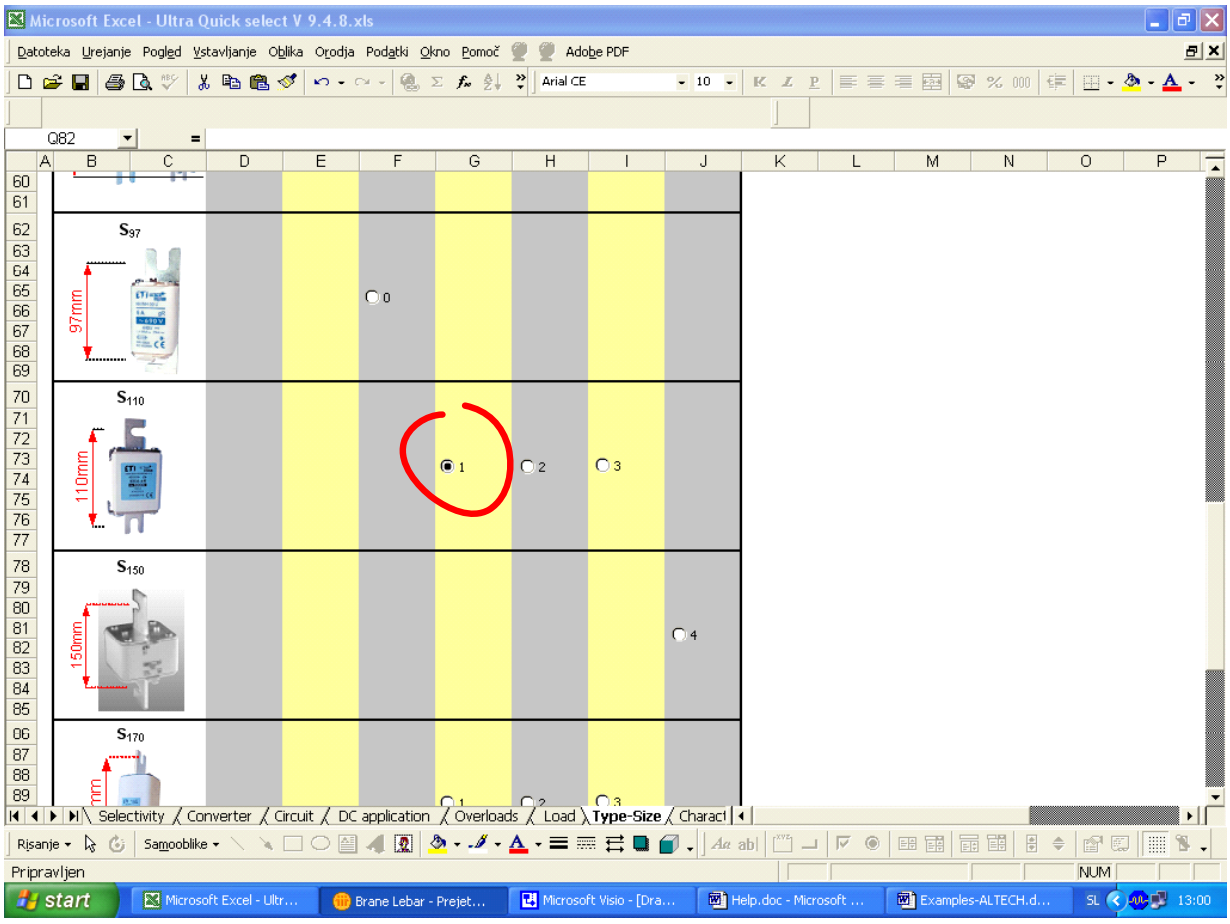
Is=200A, continous load/ a few stops per year
U_s =800V
I^2t (thyristors)=200.000A^{2}s
Breaking capacity >50kA
COS fi=0,8
T_{amb}=80 deg. C
Fan=5m/s
Cable cross section=100mm^2
Frequency=15kHz

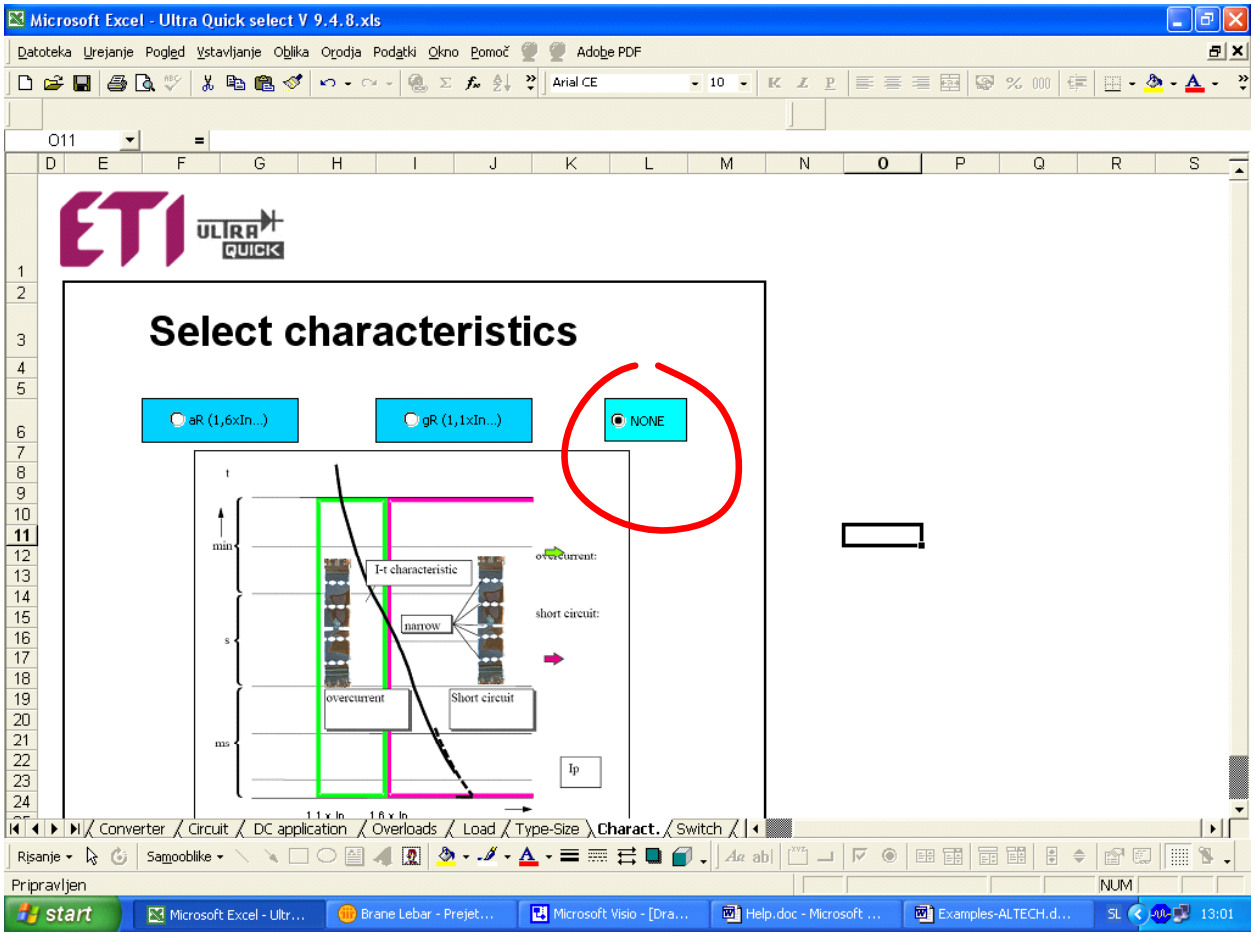
type: S110, size 1 with possibility of mountaing MK!

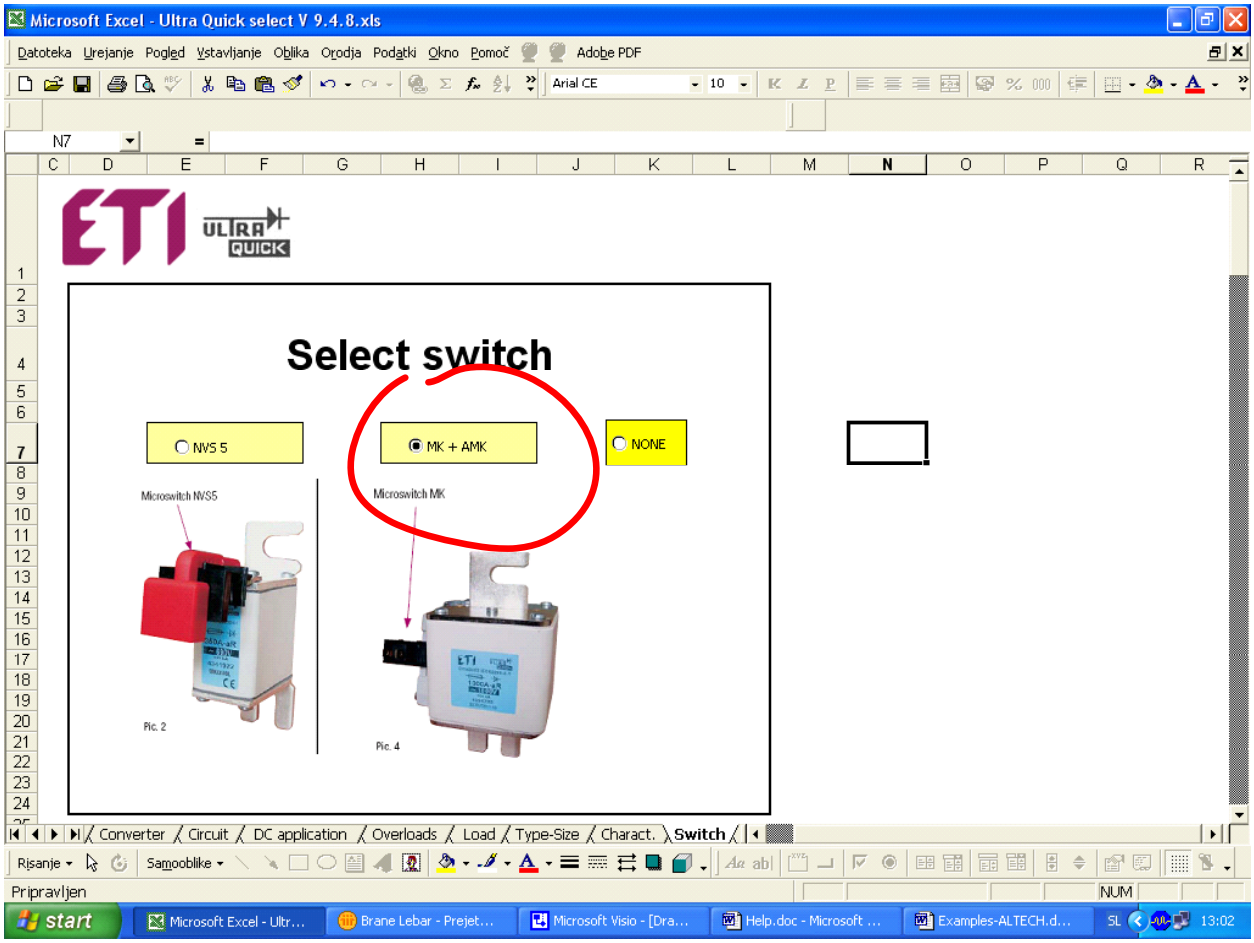
1.Choose the right fuse?

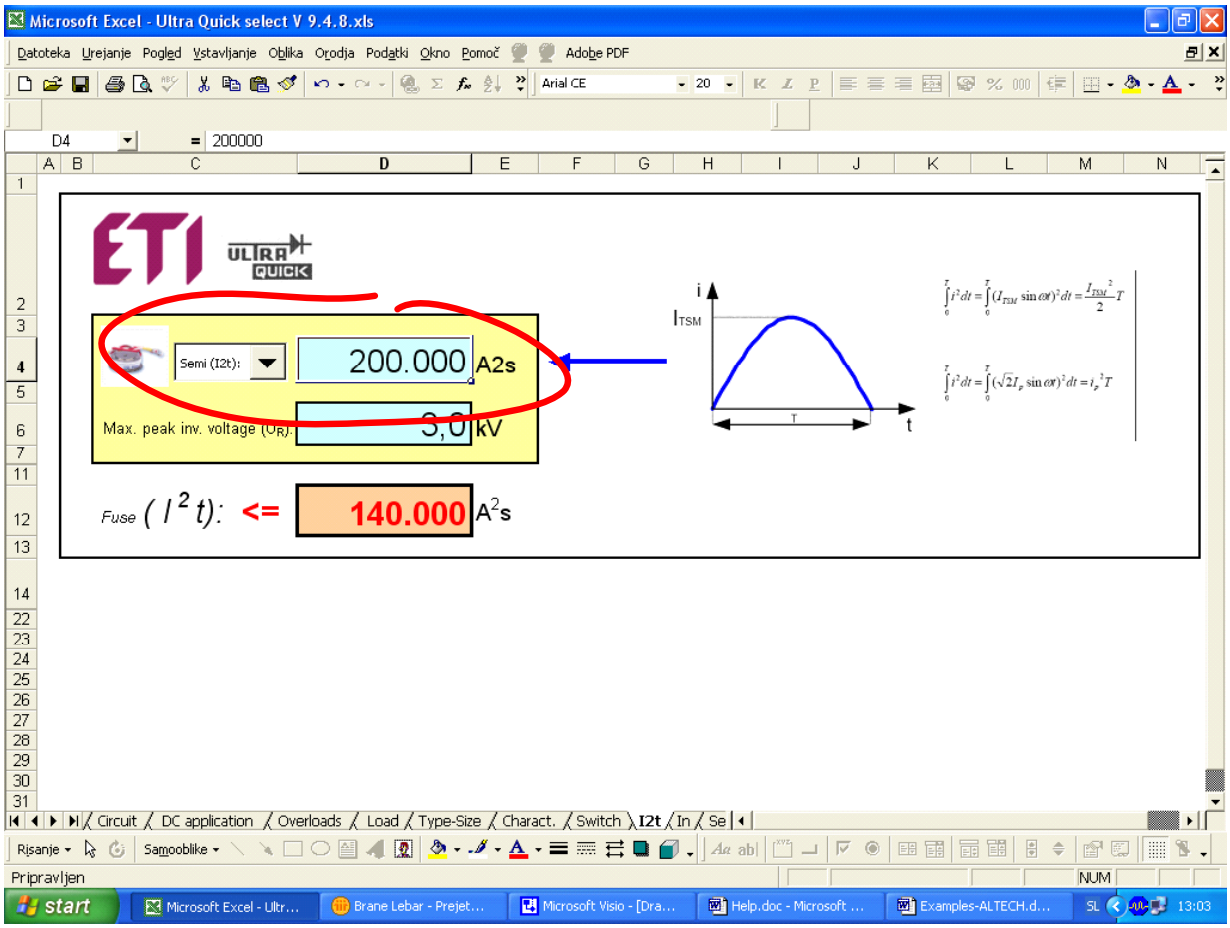


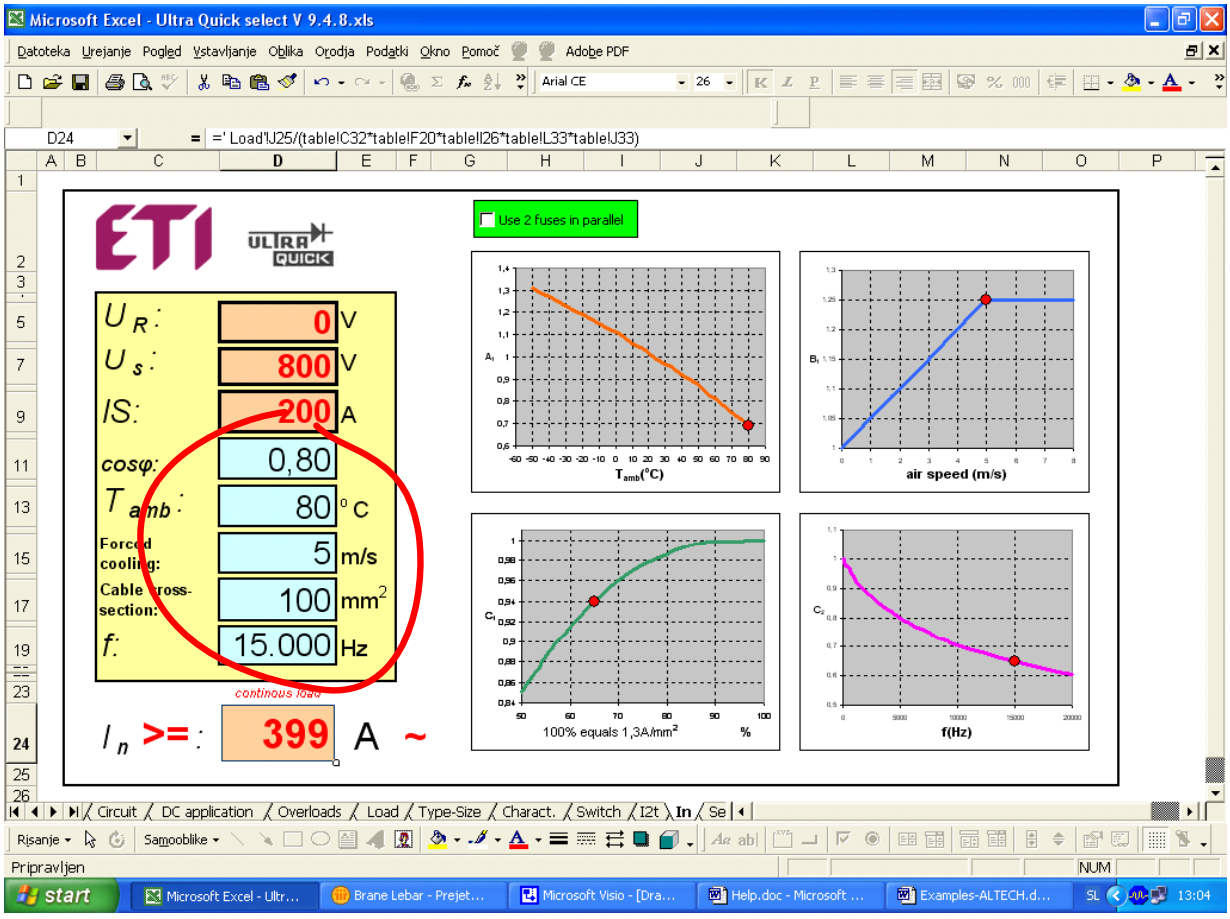

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Continous load
A few stops per year
Cyclic load
Number of overloads N:
I/t characteristics (catalogue page 46-77)
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact

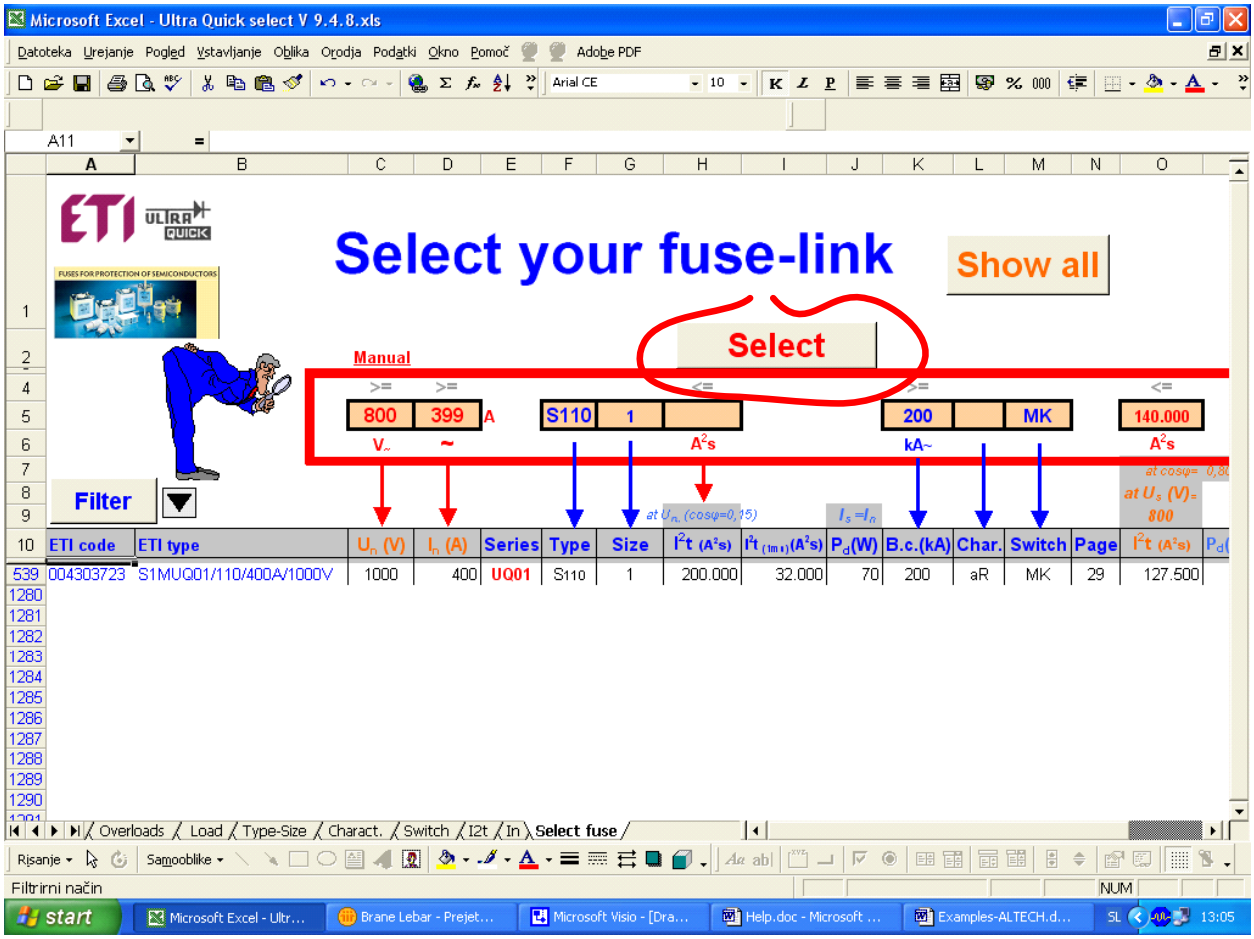

Microsoft Excel - Ultra Quick select V 9.4.8.xls
S97
97mm
S110
110mm
S150
150mm
S170
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select characteristics
aR (1,6xIn...)
gR (1,1xIn...)
NONE
I-t characteristic
narrow
overcurrent
Short circuit
short circuit:
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
Pripravljen


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select switch
NVS 5
MK + AMK
NONE
Microswitch NVS5
Microswitch MK
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
Pripravljen


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Semi (I2t):
200.000
A2s
Max. peak inv. voltage (UR):
3,0
kV
Fuse (I 2 t): <=
140.000
A2s
i
ITSM
T
t
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Se
Pripravljen


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Use 2 fuses in parallel
UR:
0
V
Us:
800
V
IS:
200
A
cosφ:
0,80
Tamb:
80
°C
Forced cooling:
5
m/s
Cable cross-section:
100
mm2
f:
15.000
Hz
continous load
In >=:
399
A
~
Tamb(°C)
air speed (m/s)
100% equals 1,3A/mm2
%
f(Hz)
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Se
Pripravljen


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Manual
800
399
S110
1
200
MK
140.000
Filter
ETI code
ETI type
Un (V)
In (A)
Series
Type
Size
I²t (A²s)
Pd(W)
B.c.(kA)
Char.
Switch
Page
539 004303723 S1MUQ01/110/400A/1000V 1000 400 UQ01 S110 1 200.000 32.000 70 200 aR MK 29 127.500
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Select fuse

Example Nr. 5:

We have the next data:

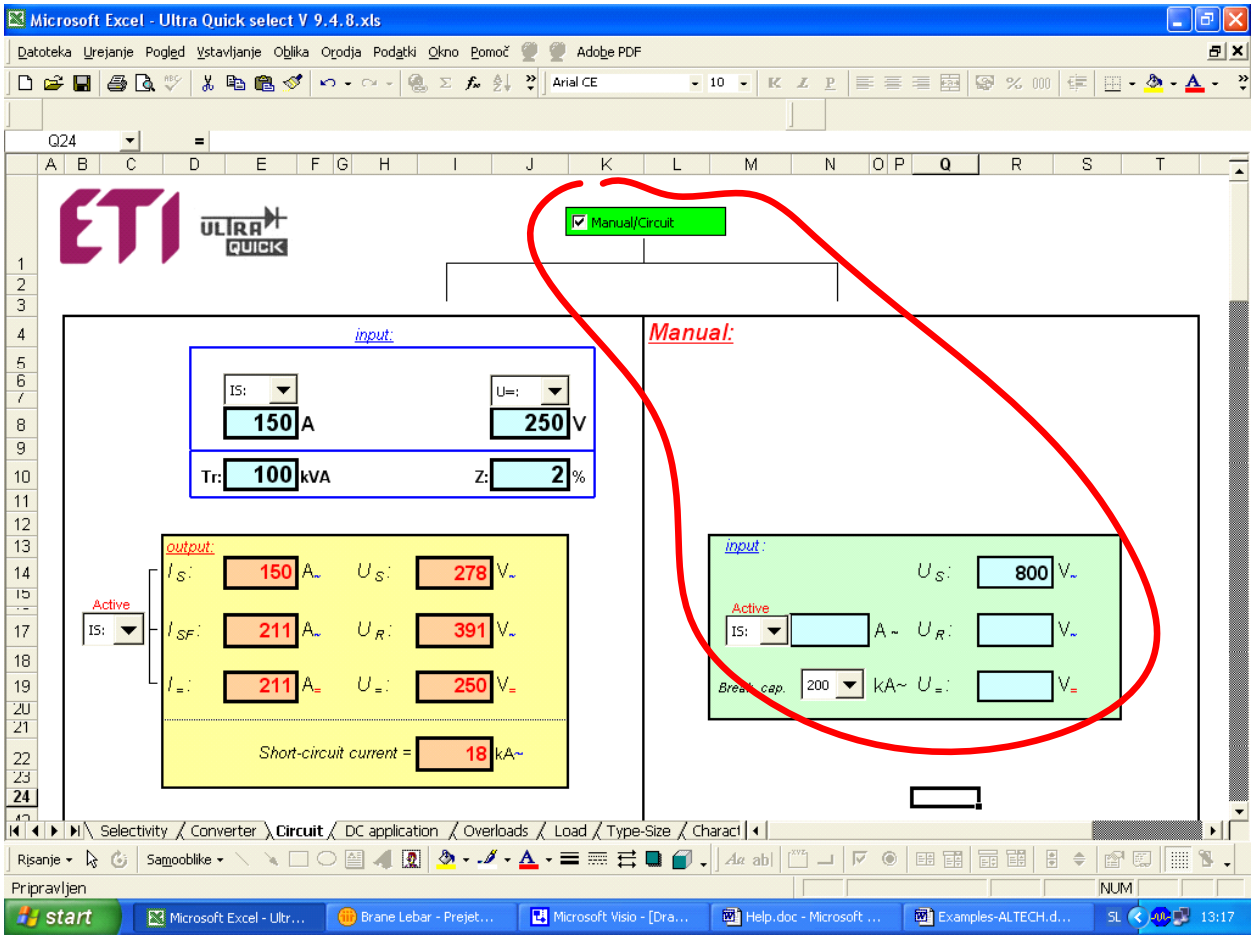
Cyclic load (AC):

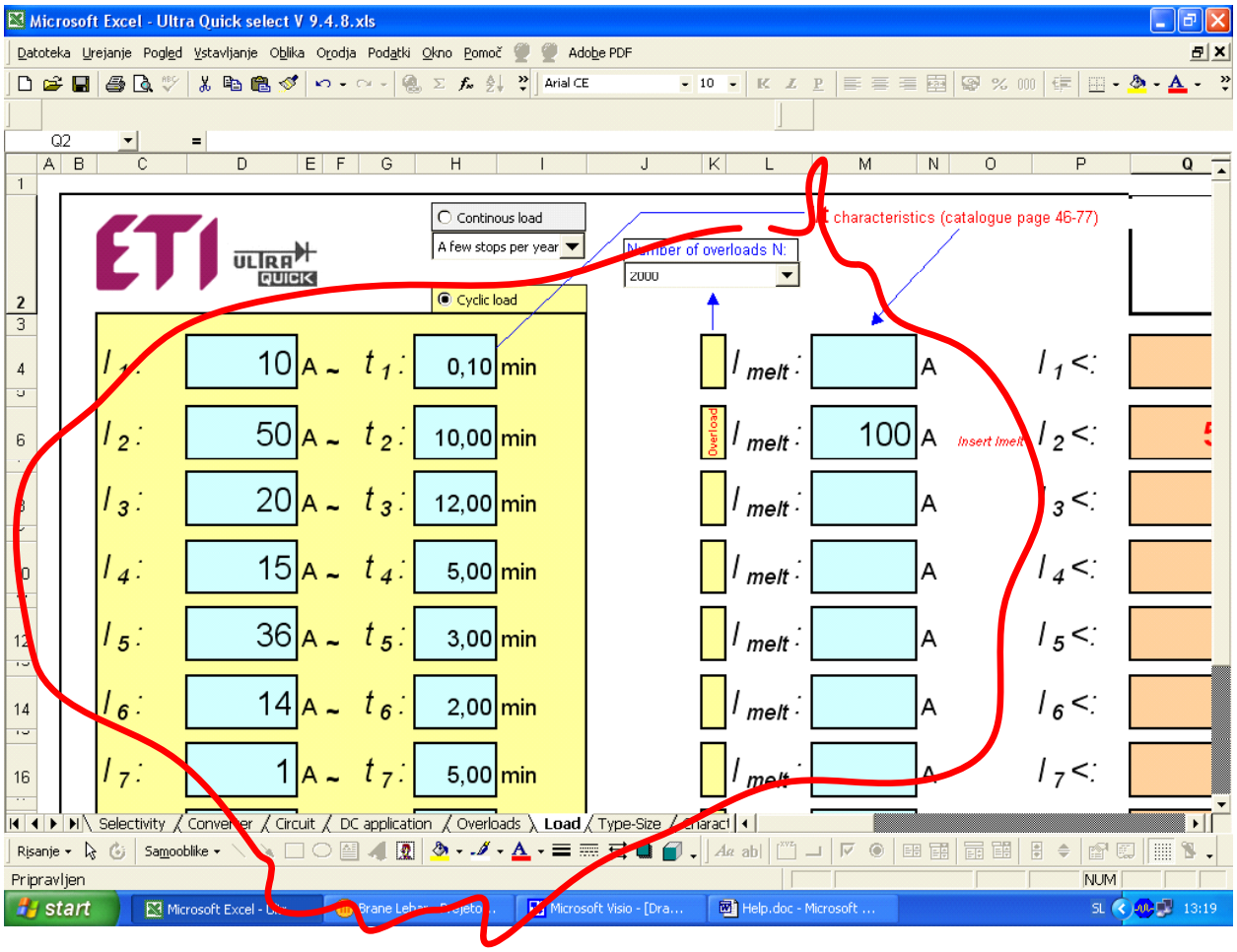
I_1:	10	A~	t_1:	0,10	min
I_2:	50	A~	t_2:	10,00	min
I_3:	20	A~	t_3:	12,00	min
I_4:	15	A~	t_4:	5,00	min
I_5:	36	A~	t_5:	3,00	min
I_6:	14	A~	t_6:	2,00	min
I_7:	1	A~	t_7:	5,00	min
I_8:	5	A~	t_8:	45,00	min

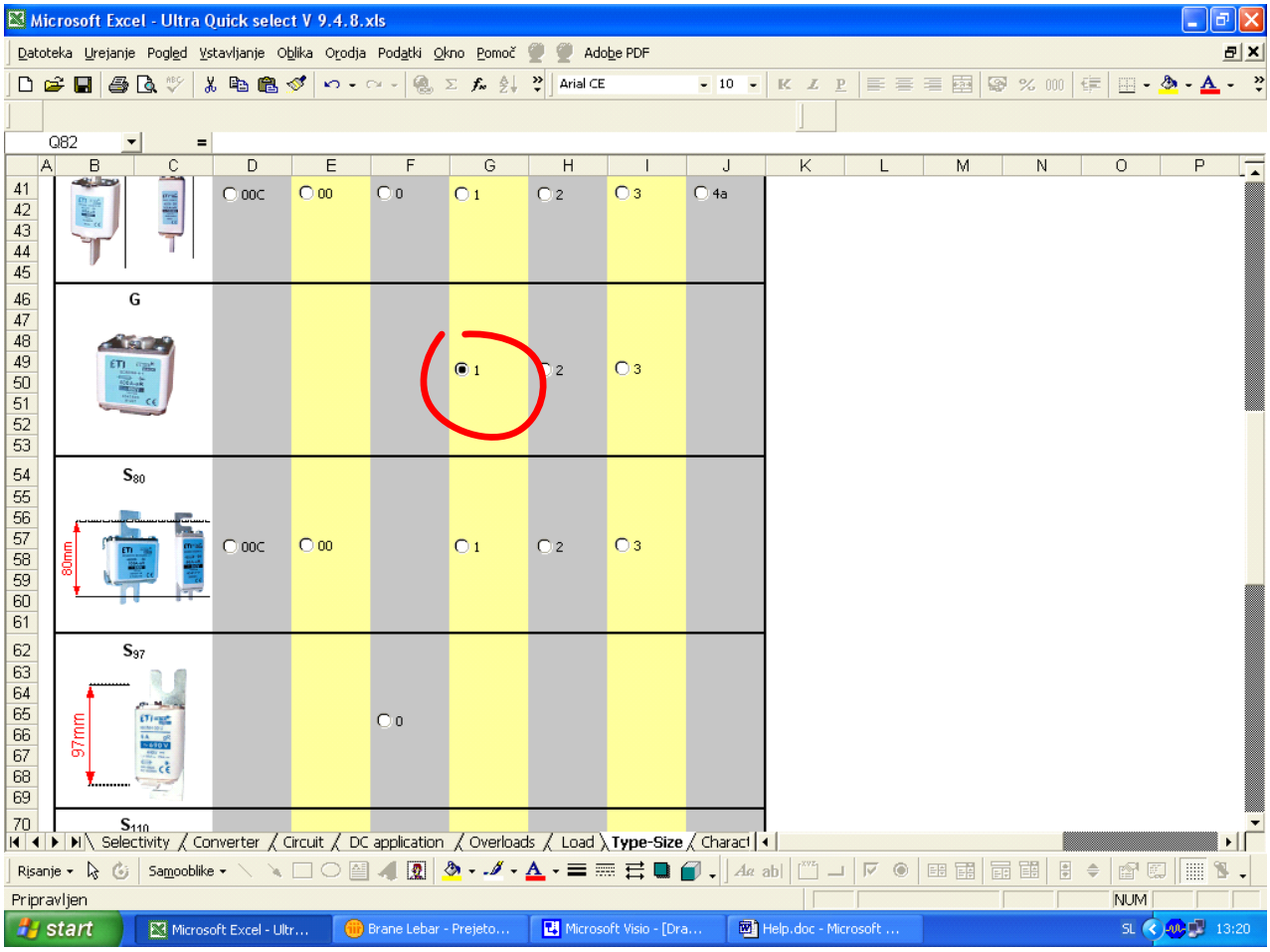
U_s =800V
I^2t (thyristors)=2.500A^2s
Breaking capacity >50kA
COS fi=0,8
T_{amb}=80 deg. C
Fan=5m/s
Cable cross section=200mm^2
Frequency=5kHz

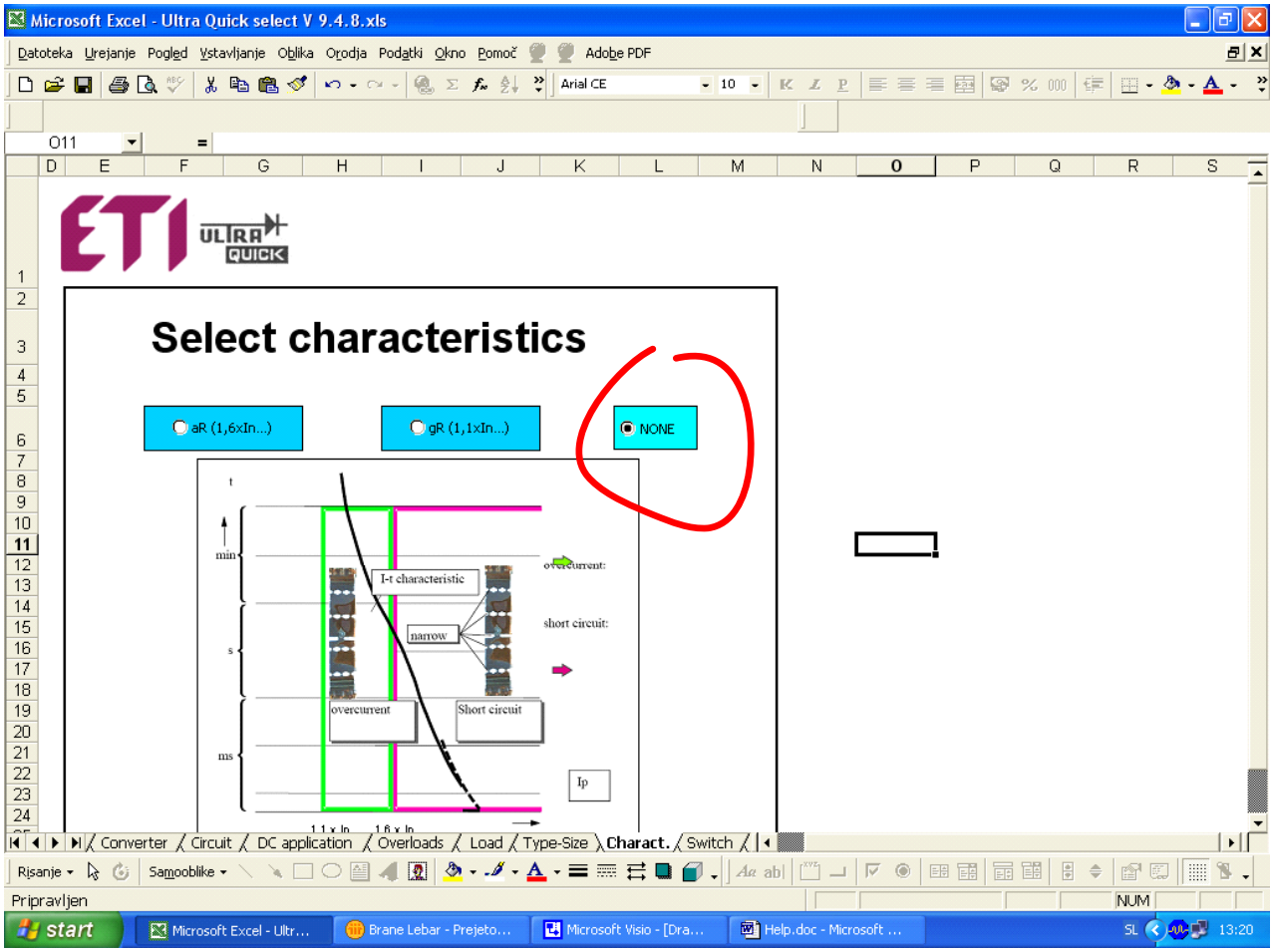
type: G, size 1 with possibility of mountaing MK!

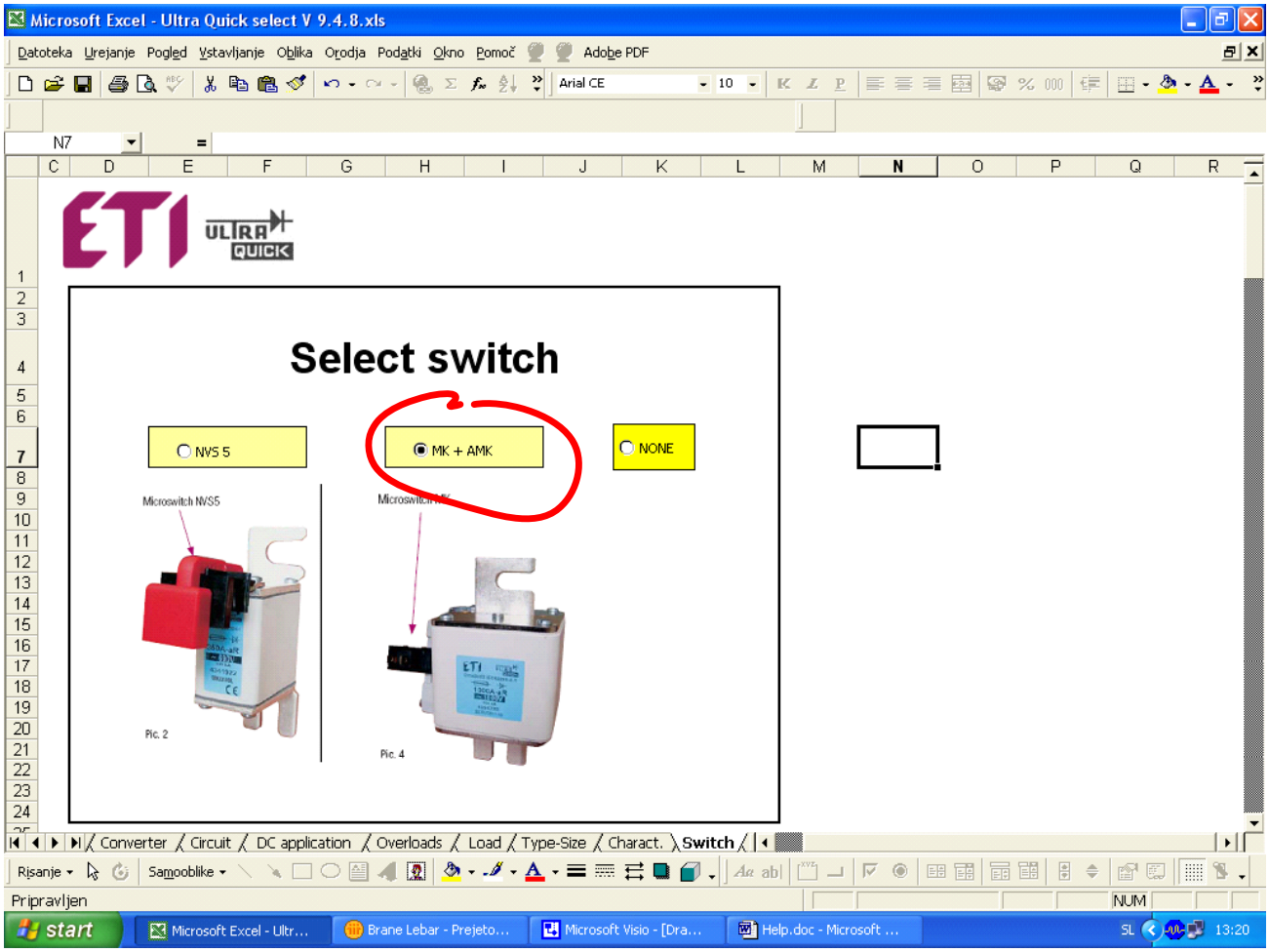
1.Choose the right fuse?

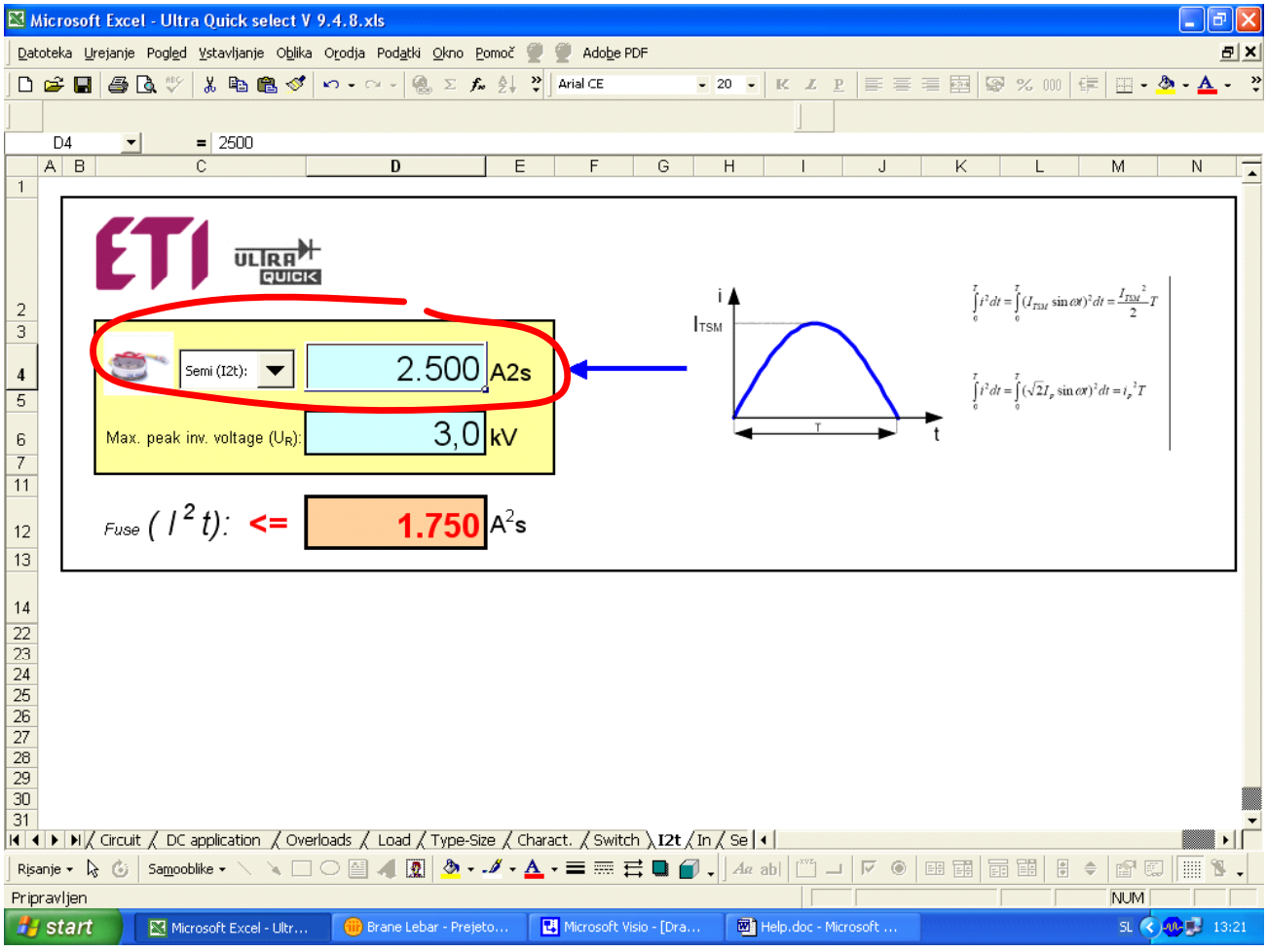

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Manual/Circuit
input:
IS: 150 A
U=: 250 V
Tr: 100 kVA
Z: 2 %
output:
Active
IS:
I_S: 150 A~ U_S: 278 V~
I_{SF}: 211 A~ U_R: 391 V~
$I_=$: 211 A= $U_=$: 250 V=
Short-circuit current = 18 kA~
Manual:
input:
U_S: 800 V~
Active
IS: A~ U_R: V~
Break. cap. 200 kA~ $U_=$: V=
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact
Pripravljen
NUM
start
13:17

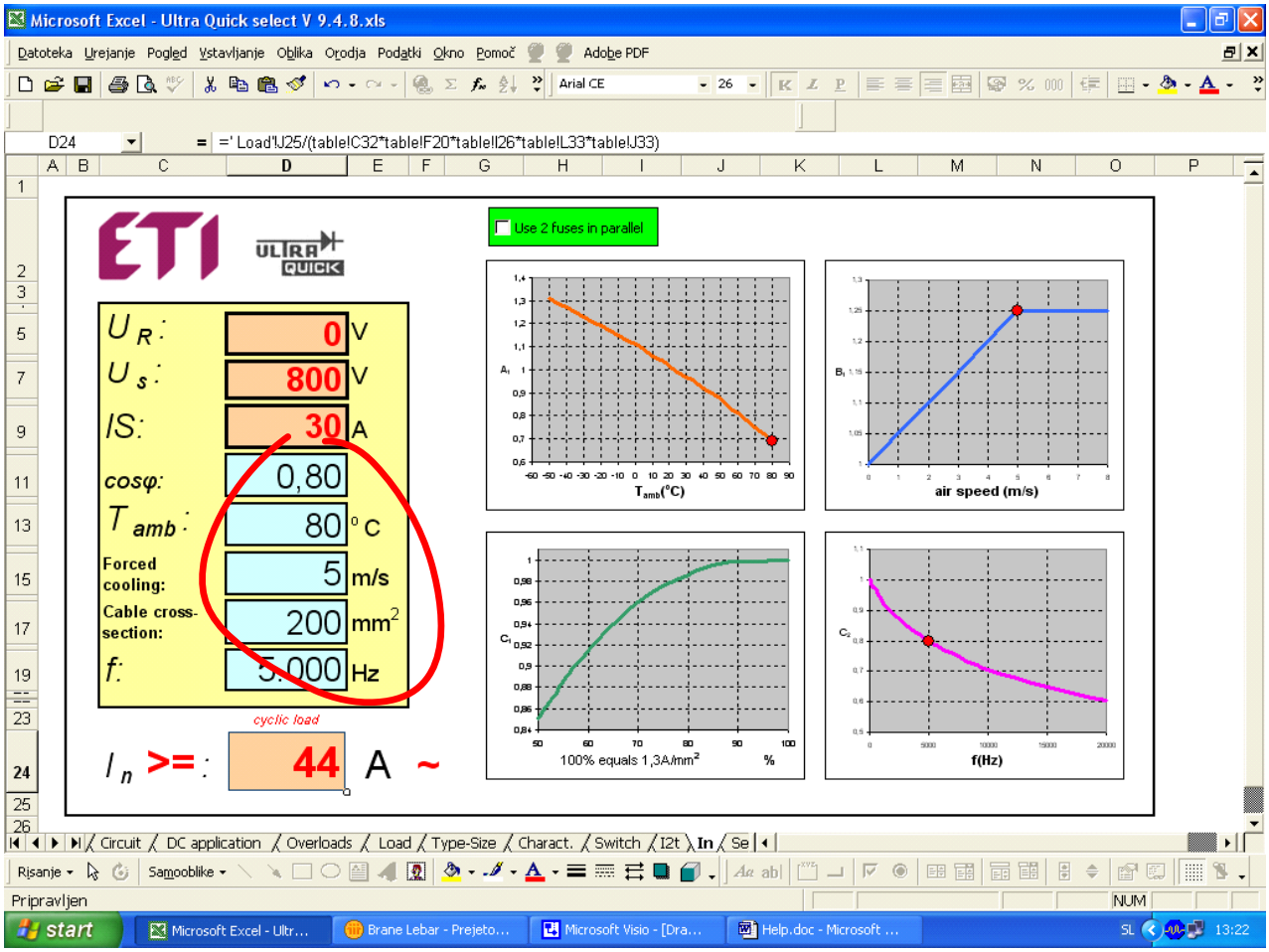

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Continous load
A few stops per year
Cyclic load
Number of overloads N:
2000
characteristics (catalogue page 46-77)
I_1: 10 A~ t_1: 0,10 min
I_2: 50 A~ t_2: 10,00 min
I_3: 20 A~ t_3: 12,00 min
I_4: 15 A~ t_4: 5,00 min
I_5: 36 A~ t_5: 3,00 min
I_6: 14 A~ t_6: 2,00 min
I_7: 1 A~ t_7: 5,00 min
I_{melt}: A
Overload
I_{melt}: 100 A
Insert Imelt
I_1<:
I_2<:
I_3<:
I_4<:
I_5<:
I_6<:
I_7<:
Selectivity
Converter
Circuit
DC application
Overloads
Load
Type-Size
Pripravljen
NUM
start
13:19

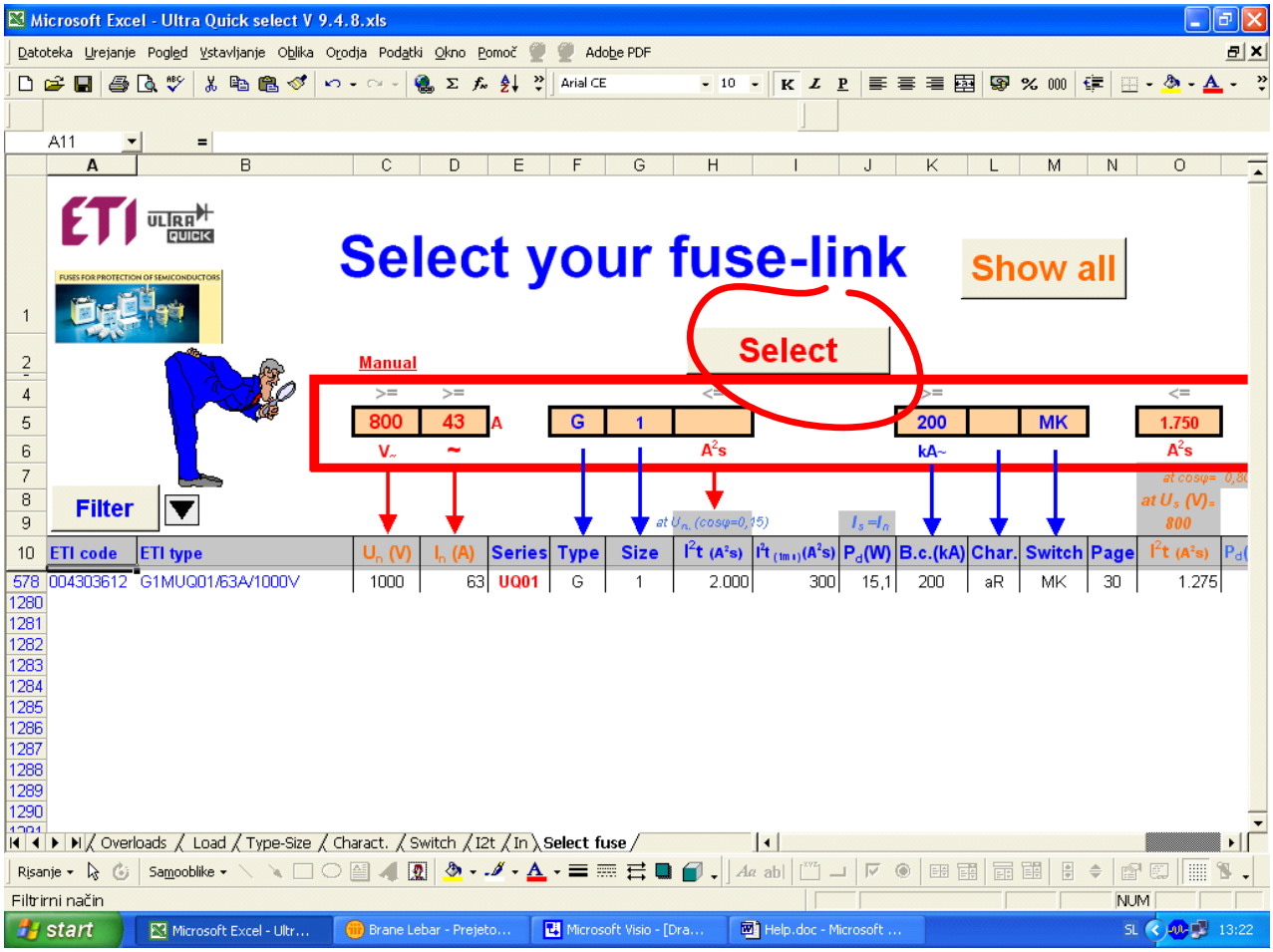

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Datoteka Urejanje Pogled Vstavljanje Oblika Orodja Podatki Okno Pomoč Adobe PDF
Arial CE 10
Q82
00C 00 0 1 2 3 4a
G
1 2 3
S80
80mm
00C 00 1 2 3
S97
97mm
0
S110
Selectivity Converter Circuit DC application Overloads Load Type-Size Charact
Risanje Samooblike
Pripravljen
NUM
start
Microsoft Excel - Ultr...
Brane Lebar - Prejeto...
Microsoft Visio - [Dra...
Help.doc - Microsoft ...
SL 13:20

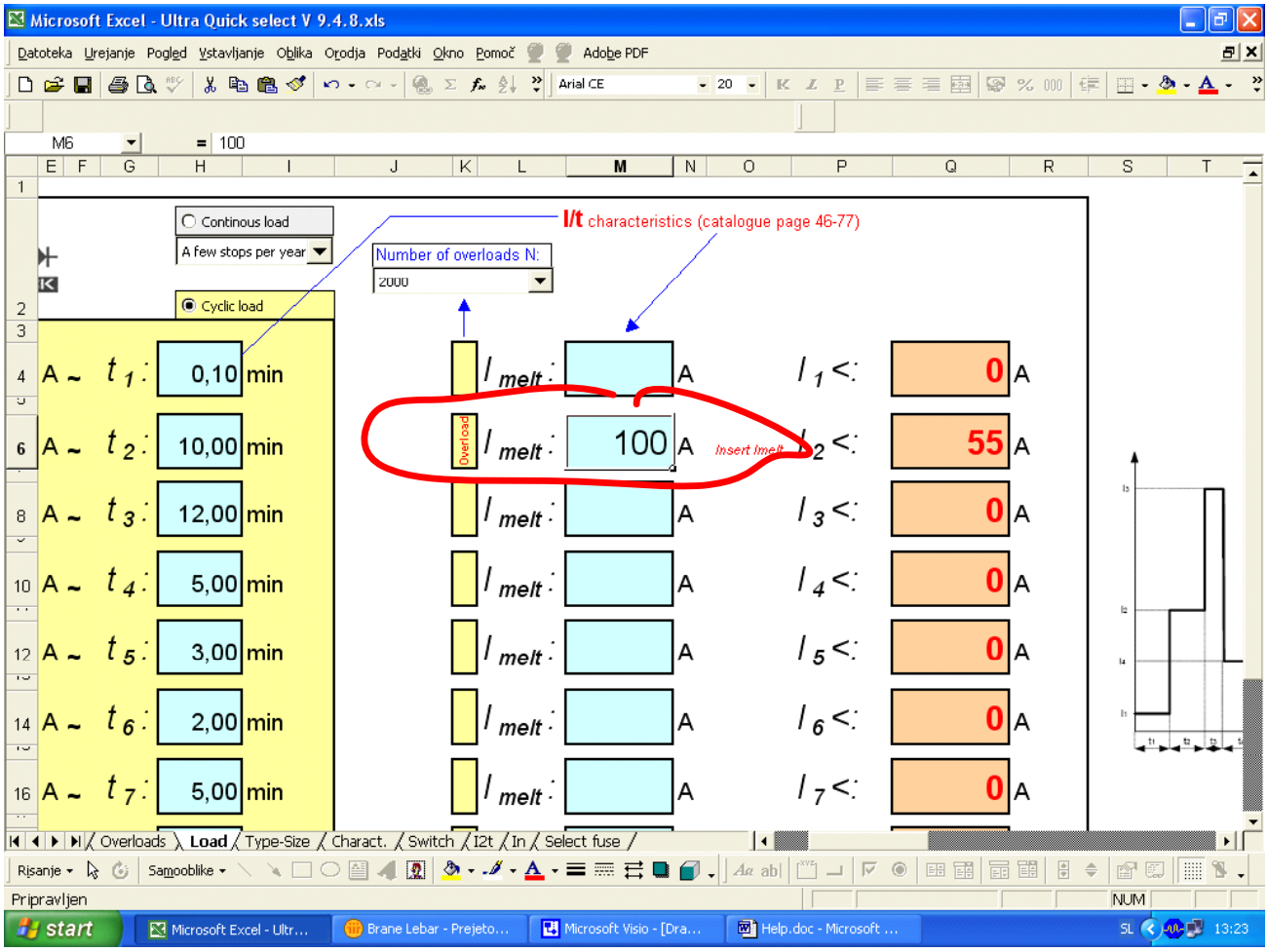

Microsoft Excel - Ultra Quick select V 9.4.8.xls
Datoteka Urejanje Pogled Vstavljanje Oblika Orodja Podatki Okno Pomoč Adobe PDF
Arial CE 10
O11
ULTRA QUICK
Select characteristics
aR (1,6xIn...)
gR (1,1xIn...)
NONE
t
min
s
ms
I-t characteristic
narrow
overcurrent:
short circuit:
overcurrent
Short circuit
Ip
1.1 x In
1.6 x In
Converter Circuit DC application Overloads Load Type-Size Charact. Switch
Risanje Samooblike
Pripravljen
NUM
start
Microsoft Excel - Ultr...
Brane Lebar - Prejeto...
Microsoft Visio - [Dra...
Help.doc - Microsoft ...
SL 13:20


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select switch
NVS 5
MK + AMK
NONE
Microswitch NVS5
Pic. 2
Pic. 4
Converter
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Semi (I2t):
2.500
A2s
Max. peak inv. voltage (UR):
3,0
kV
Fuse (I 2 t): <=
1.750
A2s
Circuit
DC application
Overloads
Load
Type-Size
Charact.
Switch
I2t
In
Se


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Use 2 fuses in parallel
U_R: 0 V
U_s: 800 V
IS: 30 A
cosφ: 0,80
T_{amb}: 80 °C
Forced cooling: 5 m/s
Cable cross-section: 200 mm²
f: 50,000 Hz
cyclic load
I_n >= : 44 A ~
T_{amb}(°C)
air speed (m/s)
100% equals 1,3A/mm²
%
f(Hz)
Circuit / DC application / Overloads / Load / Type-Size / Charact. / Switch / I2t / In / Se
Pripravljen


Microsoft Excel - Ultra Quick select V 9.4.8.xls
Select your fuse-link
Show all
Select
Manual
800 V~
43 ~
A
G
1
A²s
200 kA~
MK
1.750 A²s
Filter
ETI code
ETI type
U_n (V)
I_n (A)
Series
Type
Size
I²t (A²s)
I²t (1ms) (A²s)
P_d(W)
B.c.(kA)
Char.
Switch
Page
I²t (A²s)
578 004303612 G1MUQ01/63A/1000V 1000 63 UQ01 G 1 2.000 300 15,1 200 aR MK 30 1.275
Overloads / Load / Type-Size / Charact. / Switch / I2t / In / Select fuse
Filtrirni način



ETI gives no warranty that all errors have been eliminated from this program and shall not be able for direct, indirect or consequential losses, damages, costs, expenses, claims or fees of any nature or kind arising out of its use.