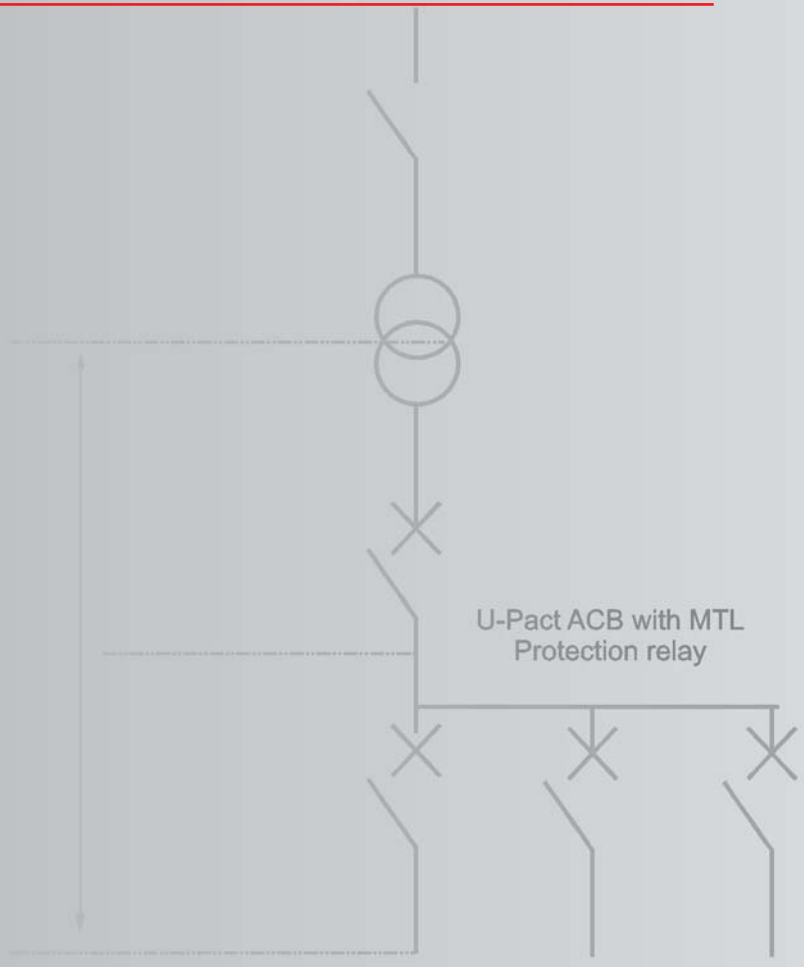
Air Circuit Breakers

Fixed & Withdrawable

400-2500A 3 & 4 Poles

Unelec

U-Pact & Spectronic



Spectronic & U-Pact

AS & BA contacts | Electrical control | UV & ST realeses | Position Contact | Mechanical Interlock

Performance Data

Type of breaker (U-Pact & Spectronic)			400	630	800	1000	1250	1600	2000	2500
Rated insulation voltage (V)		Ui	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse voltage (kV)		Uimp	8	8	8	8	8	8	8	8
Rated maximum nominal voltage (V)		Ue	690	690	690	690	690	690	690	690
Rated thermal current (A)	40°C	Ith	400	630	800	1000	1250	1600	2000	2500
	50°C	Ith	400	630	800	1000	1250	1600	2000	2500
	60°C	Ith	400	630	800	1000	1250	1500	1900	2350
Rated ultimate short-circuit breaking capacity (kA)		Icu								
Alternating current 50/60Hz	240/415V		55	55	55	55	55	55	60	60
	500V		35	35	35	35	35	35	35	35
	690V (1)		40	40	40	40	40	40	40	40
Rated peak short-circuit breaking capacity (kA)		Ics								
Alternating current 50/60Hz	240/415V		50	50	50	50	50	50	55	55
	500V		35	35	35	35	35	35	35	35
	690V (1)		40	40	40	40	40	40	40	40
Rated spak short-circuit making capacity (max) (kA peak)		Icm	120	120	120	120	120	120	130	130
Rated short time withstand current:	sec	Icw								
	415V (kA eff.)		50	50	50	50	50	50	55	55
	500V (kA eff.)		35	35	35	35	35	35	35	35
Utilization category			B	B	B	B	B	B	B	B
Number of poles			3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4
Suitable for isolation (visible breaking indication)			●	●	●	●	●	●	●	●
Endurance (number of operating cycles)										
Mechanical (total)			10000	10000	10000	10000	10000	10000	10000	10000
Electrical (at 415V)(2)			10000	10000	10000	10000	10000	10000	5000	3500
Mean time between maintrnances			1500	1500	1500	1500	1500	1500	1500	1500
Power dissipation (withdrawable, 3 poles)		(W)	150	150	150	200	300	400	450	500
4th pole conventional thermal current		(A)	800	800	800	1000	1250	1600	1250(3)	1250(3)
Pollution degree			3	3	3	3	3	3	3	3

(1) On request.
(3) Neutral reduced to the left.

(2) To guarantee this number of operations, it is necessary to check the spark arresters and the chutes as shown in the table above (Replace them when necessary) This can be done easily on site

Protection Release

Range

	LT	LTD	ST-I	GF	N
RV 23	•	(1)	•	•	(2)
Micro Trip U	•	(1)	•	•	
Micro Trip L	•	(1)	•	•	•

(1) LTD : at 6 Ir (2) On request

RV23 Setting

		Setting points
LT	(XIn)	0.5 - 0.6 - 0.7 - 0.8 - 0.9 - 1
LTD	(S)	5 -15 - 40 / delay at 6 Ir
ST	(X Ir)	2 - 3 - 4 - 6 - 8 - 10
Time delay	(ms)	50 - 100 - 200 - 300 - 500
I	(X Ir)	2 - 3 - 5 - 8 - 10 - OFF
GF	(XIn)	0.25 - 0.3 - 0.4 - 0.5 - 0.6 - 0.7
Time delay	(ms)	200 - 300 - 400

Ir = k x In

Micro Trip U Setting

		Setting points	
LT	(XIn)	0.4 - 0.5 - 0.6 - 0.7 - 0.8 - 0.85 - 0.9 -0.95 - 1	
LTD	(S)	0.5 - 1 - 2 - 5 - 7 - 10 - 15 - 20 - 25	
ST	(X Ir)	1.5 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10	
Time delay	(ms)	I^2T on	100 - 200 - 300 - 400
		I^2T off	100 - 200 - 300 - 400 - 500
I	(X Ir)	2 - 3 - 4 - 5 - 6 - 7 - 8 - 10 - off	
GF	(XIn)	0.2 - 0.3 - 0. 4 - 0. 5 - 0.6 - 0.7 - 0.8 - 1 - off	
Time delay	(ms)	I^2T on	100 - 200 - 300 - 400
		I^2T off	100 - 200 - 300 - 400 - 500

Ir = k x In

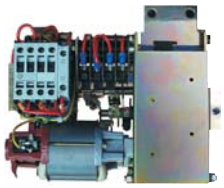
Micro Trip L Setting

		Setting points	
LT	(XIn)	0.4 ~ 1 Step : 0.5Ir	
LTD	(S)	0.29 ~ 40	
ST	(X Ir)	1.5 ~ 10 Step : 0.5Ir	
Time delay	(S)	I^2T on	0.1 ~ 1 Step : 0.5s
		I^2T off	0.1 ~ 1 Step : 0.5s
I	(X Ir)	2 ~ 10 - off Step 0.5	
GF	(XIn)	0.1 ~ 1 - off Step : 0.5s	
Time delay	(ms)	I^2T on	0.1 ~ 1 Step : 0.5s
		I^2T off	0.1 ~ 1 Step : 0.5s

Ir = k x In

Electrical control Characteristics

Rated service voltage Un			
Alternating current 50Hz	V	48-110-127-220-240-380	
Alternating current 60Hz	V	48-110-220-240-380	
Direct current	V	48-60-110-220V	
Operating voltage		From 0.85 to 1.1 Un	
Operating time at making	ms	150 at Un	
Power consumption			
Breaker type		SP400 to1600	SP2000/2500
Alternating current	VA	1600	2000
Direct current	W	800	1000



Voltmetric releases Characteristics

			Shunt trip	Undervoltage release
			ST	UVR
Rated service voltage Un				
Alternating current 50Hz		V	24-48-110/127-220-380/500	24-48-110/127-220-380-415-500
Alternating current 60Hz		V	24-48-110/127-220-380/500	24-48-110/127-220-380
Direct current		V	24-48-110/120-220/500	24-48-110-120-220-440-500
Operating voltage		Opening Closing	from 0.7 to 1.1Un	from 0.35 to 0.7 Un from 0.85 Un
Power Consumption	Hold Pick up	VA/W	4.8 200	4.8 200
Alternating current	Closing holding	VA VA	80 to 100 -	23 10
Direct current	≤ 220V 440-500V	W W	30 275	6 21
Circuit breaker open time		ms	60	60

Maximum equipment

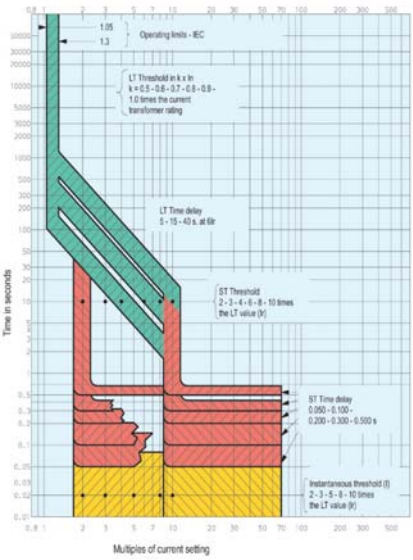
1st possibility	•	-
2nd possibility	-	-
3rd possibility	-	• (2)

(1) Circuit breaker "making" ensured from 0.85 Un
(2) Or UVRD

RV23 electronic protection relay

The RV23 electronic protection relay is the dedicated protection unit for Spectronic air circuit breakers and it has been developed to meet most stringent demands of modern circuit protection.
The RV relay offers complete protection of **overload**, **short-circuit** and **earth fault** to satisfied a broad spread of customer requirements.
RV23 can be test by RV tester unit , RV tester is protable test unit which it is able to do functional tests of all protection.
Protection on 4P 1-Earth fault 2-N Protection

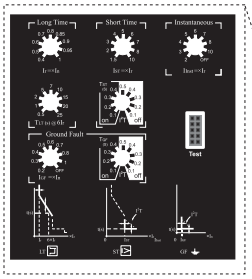
RV23



RV Tester

MicroTrip U (MTU) & RV+* protection relay

MTU offers following features:
-Overload protection
-Delayed and instantaneous short circuit protection.
-Ground fault protection
-I^2t Cropping
-Thermal memory
-Fault history with saving last trip type
-Test and monitoring via USB cable

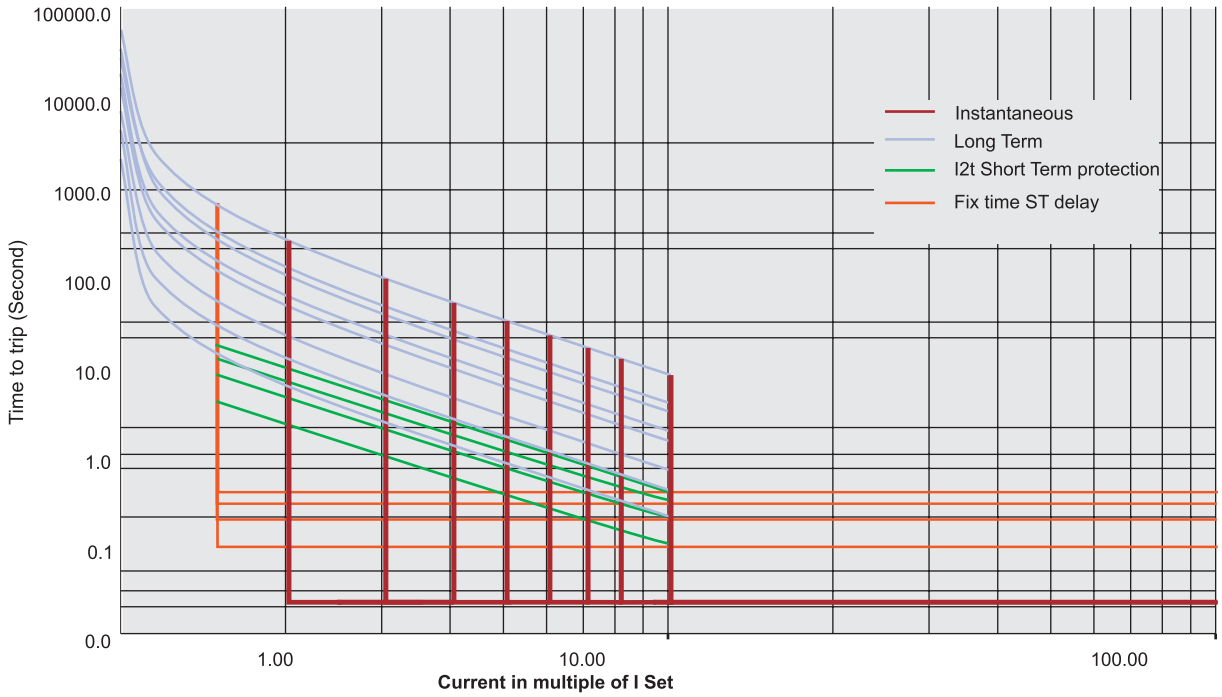


MTU

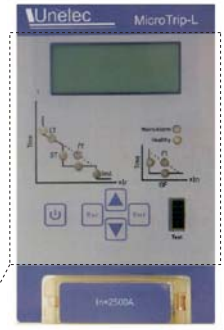
Protection
The MTU trip Unit offers the following protection functions:
Long Time Protection (LT)
LT protection channel of RV+ is Infinite Time protection curve of very inverse type ($I^2t = k$).
9 current threshold and 9 curves can be set for LT channel. Cooling time is constant .
Short Time Short Circuit Protection (ST)
S function can operate with a time delay independent of the current (t=k) or with inverse time delay (constant specific let-through energy : $I^2t=K$),as required. ST can be programmed by 9 current thresholds and delay setting range of 100ms to 400ms.
Instantaneous Short-circuit Protection (I)
I function can be programmed by 9 current thresholds.
Ground Fault (G)
G function can operate with a time delay independent of the current (t=k) or with inverse time delay (constant specific let-through energy : $I^2t=K$),as required.G function can be programmed by 8 current thresholds.

Test Cable

Overload and short circuit curves



MicroTrip L (MTL) protection Relay



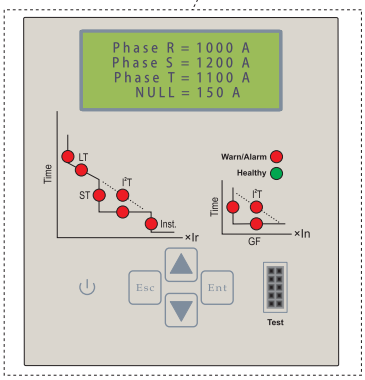
MTL

Test Cable

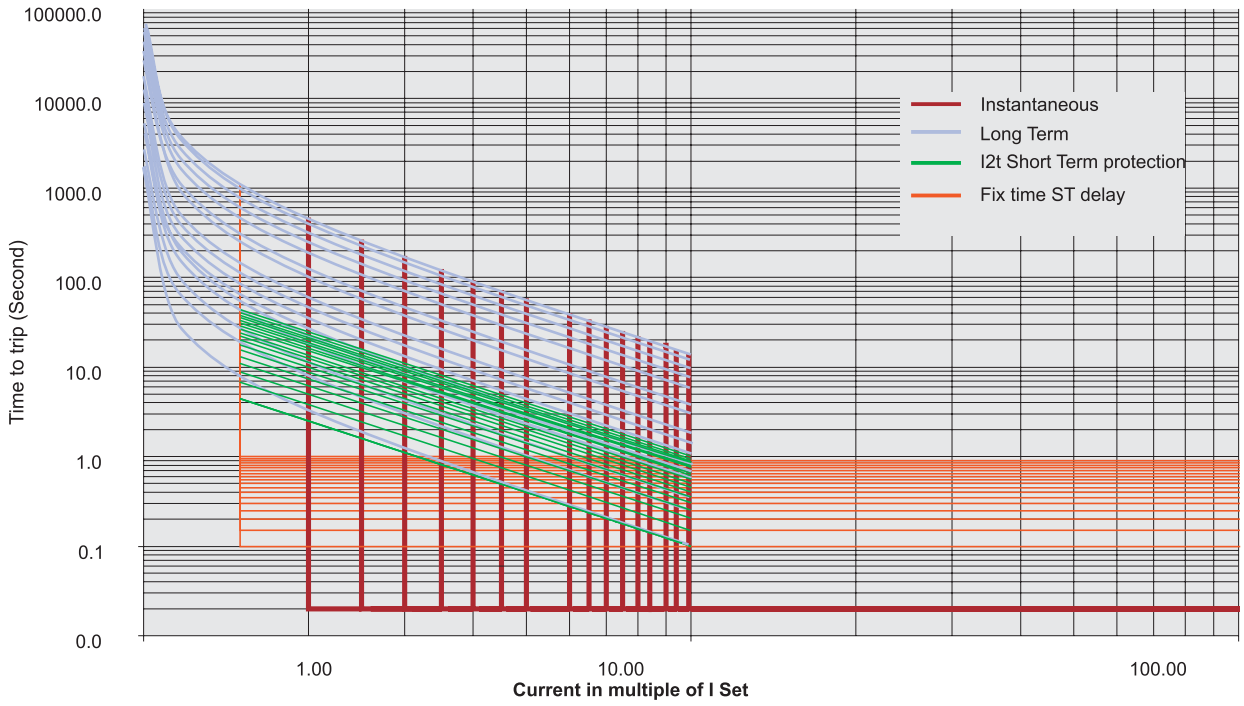
MicroTrip-L is a dedicated protection, measurement and management unit for Air Circuit Breakers and has been developed to satisfy all the requirements of modern ACBs. Thanks to its advanced microprocessor system, **MTL** offers a comprehensive solution for low voltage power system, both from protection and load management points of view.
ACB's Current Transformers installed on each phase of ACB supply **MTL** as Power Supply as well as measured signal. MTL continuously measures TRUE RMS current and using Advance Sampling Rate Technique is not influenced by frequency change. **MTL** can be permanently powered by an auxiliary power. When the ACB is closed Current transformers ensure energizing power of **MTL.**

MTL offers following features:

-Overload protection
-Delayed and instantaneous short circuit protection.
-Ground fault protection
-I^2t Cropping
-Load shedding.
-Thermal memory
-Pre-trip Alarm.
-Trip failure Alarm
-Switch selectable protection setting.
-Zone Selection features.
-Trip history and indication
-Programmable outputs.
-Programmable inputs.
-Remote Trip.
-Real Time clock and calendar (Christian, Iranian)
-Communication Modbus RTU through RS485
Test and monitoring via USB cable



Overload and short circuit curves



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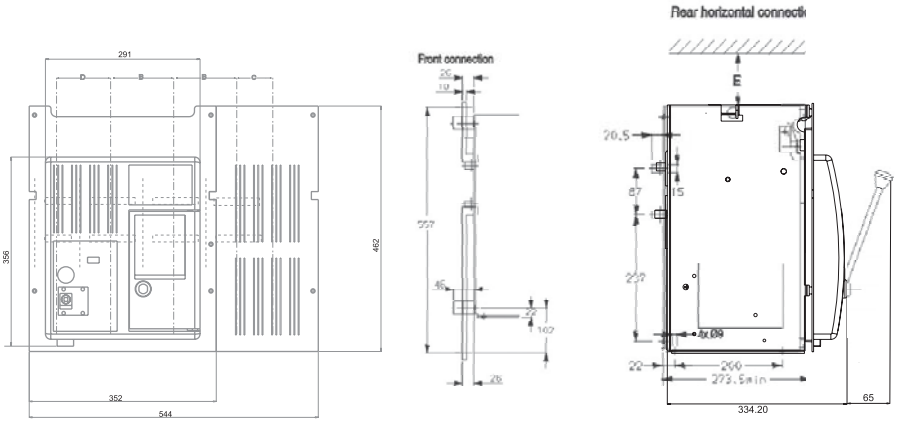
U-Pact

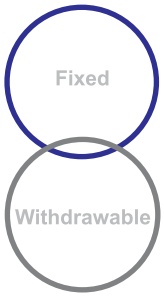
Fixed pattern
400 to 2500A



Legend

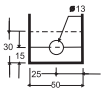
Type	Number of poles	A	B	C	D
400 to 1600	3	318	98	75	–
	4	406	98	70	98
2000-2500	3	412	130	90	–
	4	510	130	90	114

E = minimum clearance distance above the arc chutes.

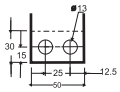


Connecting terminal strips

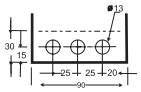
SP 800 - 1000



SP 1250 - 1600
neutral of SP 2000 - 2500



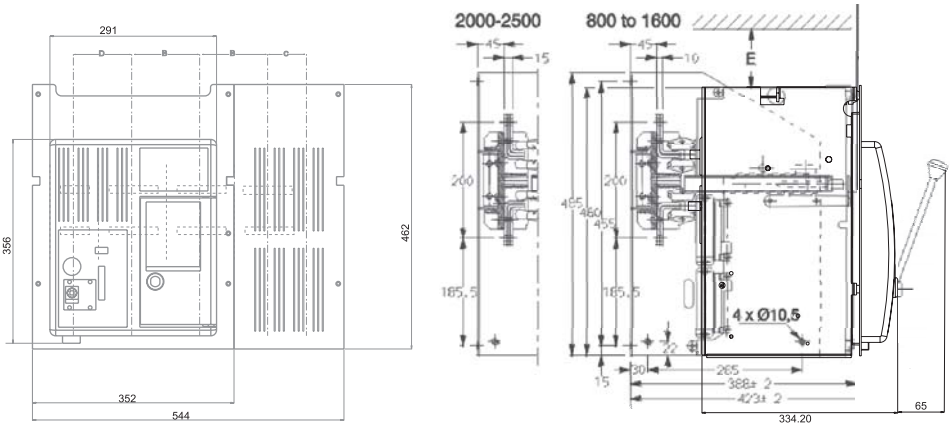
SP 2000 - 2500



Weight of fixed circuit breakers (kg)

Circuit breaker Type			
		manual control	electrical control
SP 400 to 1600	3P	45	51
	4P	57	63
SP 2000-2500	3P	54	60
	4P	66	72

Withdrawable pattern
400 to 2500A



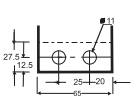
Legend

Type	Number of poles	A	B	C	D
400 to 1600	3	374	98	89	-
	4	462	98	84	98
2000-2500	3	468	130	104	-
	4	598	130	104	114

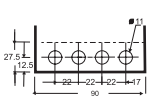
E = minimum clearance distance above the arc chutes.

Connecting terminal strips

SP 800 - 1600
neutral of SP 2000 - 2500



SP 2000 - 2500



Weight of withdrawable circuit breakers (kg)

Circuit breaker Type			
		manual control	electrical control
SP 400 to 1250	3P	47	53
	4P	59	65
SP 1600	3P	48	54
	4P	60	66
SP 2000	3P	58	64
	4P	70	76
SP 2500	3P	59	65
	4P	71	77

All dimension shown in mm