

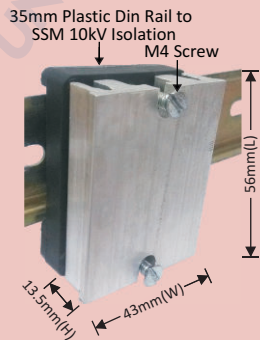
UNISON CONTROLS PVT. LTD.

HEAT SINK

SOLID STATE MODULE

HEAT SINK

HEAT SINK TYPE "C-56" + DIN RAIL



Inbuilt Heat Sink IN 901 SSM MODEL
No Separate Heat Sink available

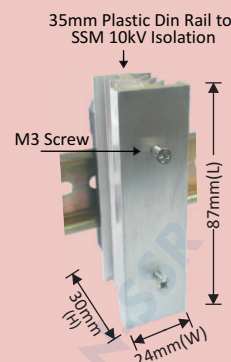
TYPE "C-56"
Model 901-1 Nos.
Current upto
16Amp @40°C
with Din Rail 42mm,
Thermal Resistance
 $R_{\theta SA} = 4^{\circ}\text{C/W}$
 $R_{\theta SA} = 277.15 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
353mm²x56mm
=19768mm²
43mm(W)x 56mm(L)
x 13.5mm(H) + SSM
Weight : @ 57gms

HEAT SINK TYPE "G-68" + DIN RAIL



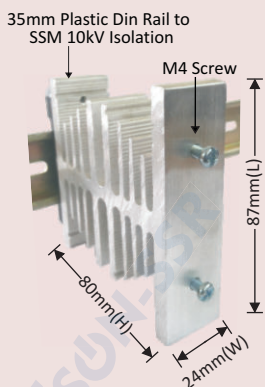
TYPE "G-68"
Model 901-1 Nos.
Model 808-1 Nos.
Current upto
26Amp @40°C
with Din Rail 22.5mm,
Thermal Resistance
 $R_{\theta SA} = 2.5^{\circ}\text{C/W}$
 $R_{\theta SA} = 275.65 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
491mm²x68mm
=33388 mm²
44mm(W) X 68mm(L)
X 32mm(H) + SSM
Weight : @ 95gms

HEAT SINK TYPE "V-87" + DIN RAIL



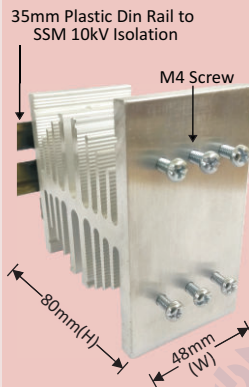
TYPE "V-87"
Model 803-1 Nos.
Current upto
22Amp @40°C
with Din Rail 22.5mm,
Thermal Resistance
 $R_{\theta SA} = 2.45^{\circ}\text{C/W}$
 $R_{\theta SA} = 275.6 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
248mm²x87mm
=21576 mm²
24mm(W) X 87mm(L)
X 30mm(H) + SSM
Weight : @ 60gms

HEAT SINK TYPE "B-24" + DIN RAIL



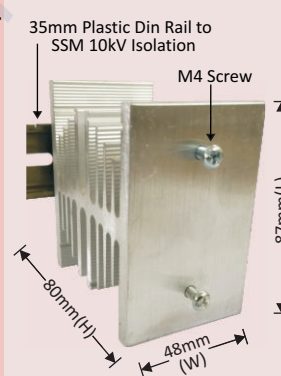
TYPE "B-24"
Model 803-1 Nos.
Current upto
30Amp @40°C
with Din Rail 22.5mm,
Thermal Resistance
 $R_{\theta SA} = 1.8^{\circ}\text{C/W}$
 $R_{\theta SA} = 274.95 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x24mm
=63120 mm²
24mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 170gms

HEAT SINK TYPE "B-48" + DIN RAIL



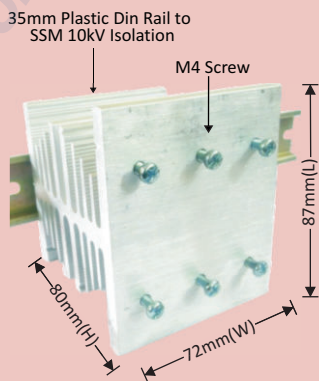
TYPE "B-48"
Model 803-Upto 2 Nos.
Current upto
36Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 1.17^{\circ}\text{C/W}$
 $R_{\theta SA} = 274.32 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x48mm
=126240 mm²
48mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 310gms

HEAT SINK TYPE "A-48" + DIN RAIL



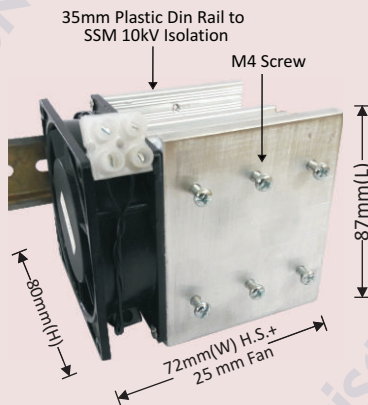
TYPE "A-48"
Model 901-1 Nos.
Current upto
36Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 1.17^{\circ}\text{C/W}$
 $R_{\theta SA} = 274.32 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x48mm
=126240 mm²
48mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 310gms

HEAT SINK TYPE "B-72" + DIN RAIL



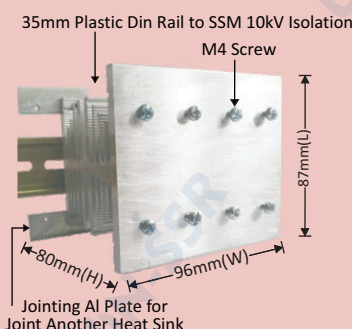
TYPE "B-72"
Model 803-Upto 3 Nos.
Model 901-1 Nos.
Current upto
60Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.85^{\circ}\text{C/W}$
 $R_{\theta SA} = 274 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x72mm
=189360 mm²
72mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 500gms

HEAT SINK TYPE "B-72" WITH FAN



TYPE "B-72" WITH FAN
Model 803-Upto 3 Nos.
Model 901-1 Nos.
Current upto
65Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.8^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.95 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x72mm
=189360 mm²
72mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 730gms

HEAT SINK TYPE "B-96" + DIN RAIL



Joining Al Plate for
Joint Another Heat Sink

TYPE "B-96"
Model 803-Upto 4 Nos.
Current upto
80Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.68^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.83 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x96mm
=252480 mm²
96mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 660gms

HEAT SINK TYPE "B-96" WITH FAN



TYPE "B-96" WITH FAN
Model 803-Upto 4 Nos.
Current upto
85Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.55^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.7 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²x96mm
=252480 mm²
96mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 890gms

Note : Specifications are subject to change without prior notice.

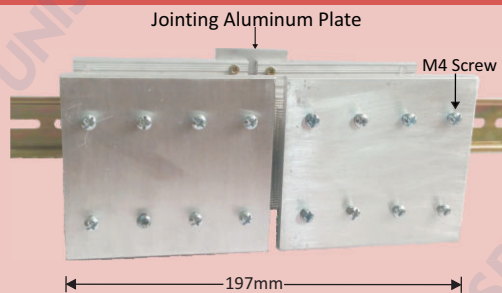
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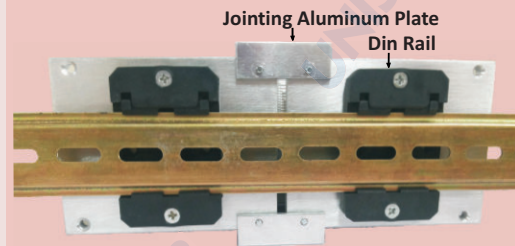
UNISON CONTROLS PVT. LTD.

SOLID STATE MODULE

HEAT SINK TYPE "B-96" WITH JOINT PLATE

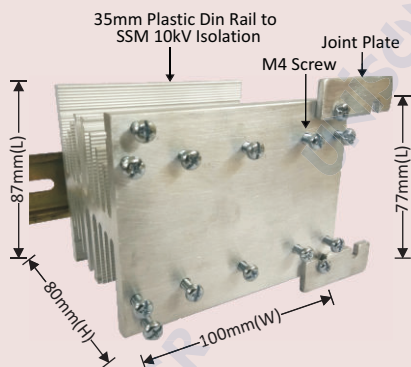


Total Heat Sink Current Capacity
 = 80 Amp X 2 Nos.
 = 160 Amp
 Heat Sink B-96 + Din Rail
 connected by Joint Al Plate
 for uniform heat dissipation.
 After mounting of SSM with
 Heat sink + Joint Al Plate you
 can fix it on 35 mm Din channel.

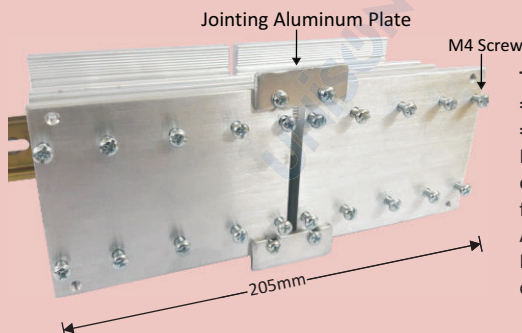


HEAT SINK TYPE "A-100" + DIN RAIL

TYPE "A-100"
Model 901-Upto 2 Nos.
Model 905-Upto 1 Nos.
Current upto
80Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.65^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.83 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
 $2630\text{mm}^2 \times 100\text{mm}$
 $= 263000 \text{ mm}^3$
 $100\text{mm(W)} \times 87\text{mm(L)}$
 $\times 80\text{mm(H)} + \text{SSM}$
Weight : @ 690gms



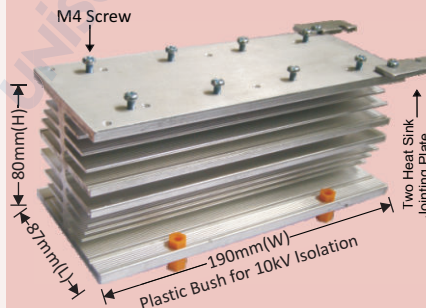
HEAT SINK TYPE "A-100" WITH JOINT PLATE



Total Heat Sink Current Capacity
 = 80 Amp X 2 Nos.
 = 160 Amp
 Heat Sink A-100 + Din Rail
 connected by Joint Al Plate
 for uniform heat dissipation.
 After mounting of SSM with
 Heat sink + Joint Al Plate you
 can fix it on 35 mm Din channel.

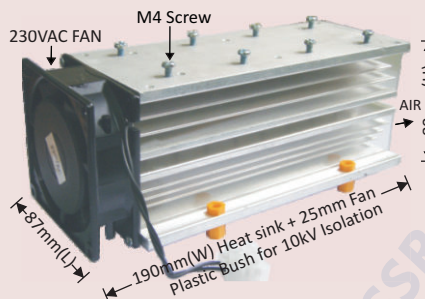
HEAT SINK TYPE "A-190" WITH OUT FAN

TYPE "A-190" WITH OUT FAN
Model 901-Upto 4 Nos.
Model 905-Upto 1 Nos.
Model 803-Upto 4 Nos.
Current upto 132Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.33^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.48 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
 $2630\text{mm}^2 \times 190\text{mm}$
 $= 499700 \text{ mm}^3$
 $190\text{mm(W)} \times 87\text{mm(L)}$
 $\times 80\text{mm(H)} + \text{SSM}$
Weight : @ 1300gms

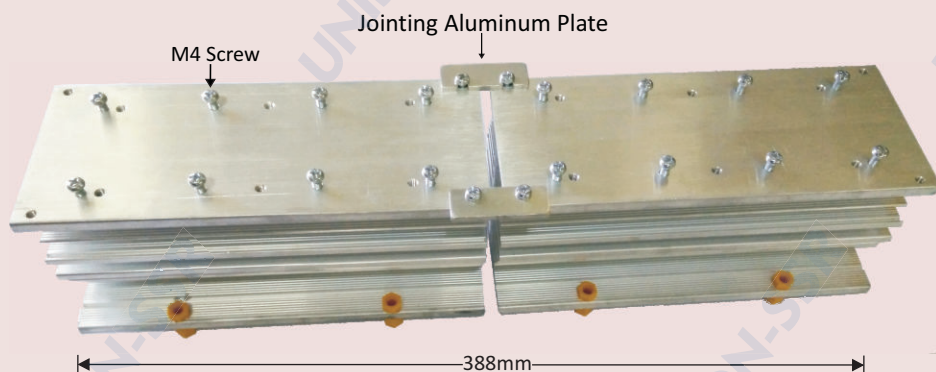


HEAT SINK TYPE "A-190" WITH 230VAC FAN

TYPE "A-190" WITH 230VAC FAN
Model 901-Upto 4 Nos.
Model 905-Upto 1 Nos.
Model 803-Upto 4 Nos.
Current upto 156Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.22^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.37 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
 $2630\text{mm}^2 \times 190\text{mm}$
 $= 499700 \text{ mm}^3$
 $190\text{mm(W)} \times 87\text{mm(L)}$
 $\times 80\text{mm(H)} + \text{SSM}$
Weight : @ 1530gms



HEAT SINK TYPE "A-190" WITH JOINT PLATE



Total Heat Sink Current Capacity
 = 135 Amp X 2 Nos.
 = 270 Amp
 Heat Sink A-190 connected by Joint Al Plate
 for uniform heat dissipation.

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SOLID STATE MODULE

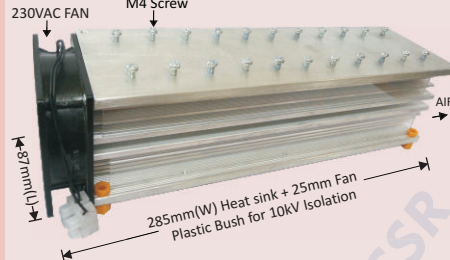
HEAT SINK TYPE "A-285" WITH OUT FAN

TYPE "A-285" WITH OUT FAN
Model 901-Upto 6 Nos.
Model 905-Upto 2 Nos.
Model 803-Upto 11 Nos.
Current upto 210Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.09^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.24 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²X285mm
=749550 mm²
285mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 1950gms



HEAT SINK TYPE "A-285" WITH 230VAC FAN

TYPE "A-285" WITH 230VAC FAN
Model 901-Upto 6 Nos.
Model 905-Upto 2 Nos.
Model 803-Upto 11 Nos.
Current upto 240Amp @40°C
with Din Rail 42mm
Thermal Resistance
 $R_{\theta SA} = 0.04^{\circ}\text{C/W}$
 $R_{\theta SA} = 273.19 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
2630mm²X285mm
=749550 mm²
285mm(W) X 87mm(L)
X 80mm(H) + SSM
Weight : @ 2175gms



HEAT SINK TYPE "G-30" + DIN RAIL

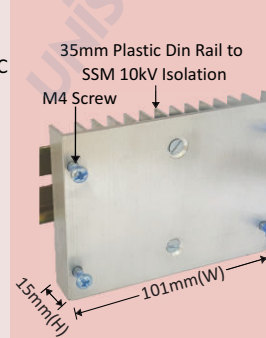
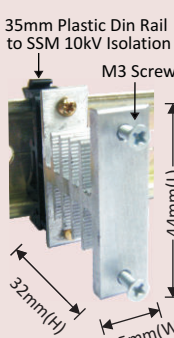
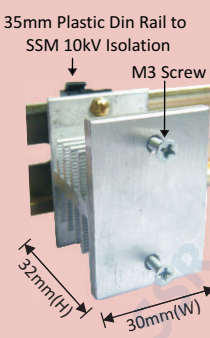
HEAT SINK TYPE "G-12.5" + DIN

HEAT SINK TYPE "E-75" + DIN RAIL

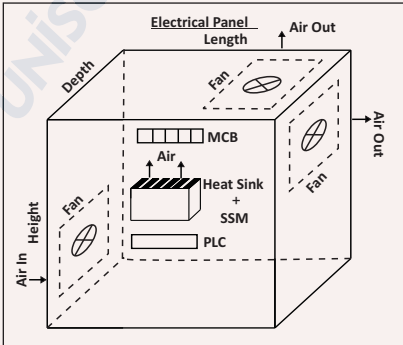
TYPE "G-30"
Model 808- 1 Nos.
Current upto 15Amp @40°C
with Din Rail 10mm
Thermal Resistance
 $R_{\theta SA} = 3.59^{\circ}\text{C/W}$
 $R_{\theta SA} = 276.24 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
491mm²X30mm
=14730 mm²
30mm(W) X 44mm(L)
X 32mm(H) + SSM
Weight : @ 40gms

TYPE "G-12.5"
Model 807- 1 Nos.
Current upto 8Amp @40°C
with Din Rail 10mm
Thermal Resistance
 $R_{\theta SA} = 6.8^{\circ}\text{C/W}$
 $R_{\theta SA} = 279.95 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
491mm²X30mm
=6137.5 mm²
12.5mm(W) X 44mm(L)
X 32mm(H) + SSM
Weight : @ 19gms

TYPE "E-75"
Model 905- 1 Nos.
Current upto 21Amp @40°C
with Din Rail 45mm
Thermal Resistance
 $R_{\theta SA} = 3^{\circ}\text{C/W}$
 $R_{\theta SA} = 278.15 \text{ K/W}$
 $\Delta T = 75^{\circ}\text{C}$
Surface Area:
267mm²X75mm
=20025 mm²
101mm(W) X 75mm(L)
X 15mm(H) + SSM
Weight : @ 120gms



AIRFLOW FOR EFFICIENT HEAT TRANSFER



- ⇒ Heat Sink Fins should be in Vertical Position So that Hot Air flow from Bottom to Top - Self Cooling.
- ⇒ Our heat sinks are designed in such manner that horizontal & vertical convection both occurs properly.
- ⇒ Keep 20mm Gap at Top and Bottom of Heat Sink.
- ⇒ Apply Heat Sink Compound between SSM and Heat Sink.
- ⇒ The Screw should be tightened properly so that total Exposed Aluminum is Sufficient to Dissipated One Watt of Heat Generated.
- ⇒ **Advantages of using DBC Technology :**
Copper has higher thermal conductivity So more heat dissipation of junction to case & case to sink.
Due to this thermal resistance $R_{\theta jc}$ is very less.
Reduction in thermal resistance increases thermal efficiency of whole system.

THERMAL CALCULATION

$\Delta T = T_j - T_A$	= $P(R_{\theta jc} + R_{\theta cs} + R_{\theta sa})$
T_j	= Junction Temperature ($^{\circ}\text{C}$) 125 $^{\circ}\text{C}$
T_A	= Ambient Temperature($^{\circ}\text{C}$)
P_d	= Power Dissipation (Watts) Voltage Drop X Load Current
$R_{\theta jc}$	= Thermal Resistance Junction to Case $^{\circ}\text{C/W}$
$R_{\theta cs}$	= Thermal Resistance of Heat Sink Compound (0.2 $^{\circ}\text{C/W}$ Type)
$R_{\theta sa}$	= Thermal Resistance of External Heat Sink ($^{\circ}\text{C/W}$) it depend upon Length, Width, Expose Aluminum (0.5 to 5)

NOTE : If SSM Current Capacity is high and it is mounted on lower capacity heat sink than maximum load current will also decrease as heat dissipation area decreases.
Example: 1) 50Amp SSM used for 26Amp Load Current than "G-68" Type of Heat Sink. 2) 50Amp SSM used for 32Amp Load Current than "B-48" Type of Heat Sink.

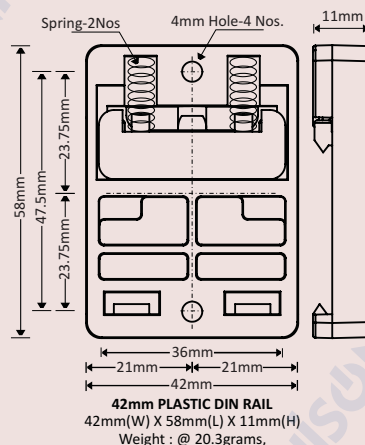
PANEL CUTOUT VIEW

35mm DIN RAIL 42mm PLASTIC

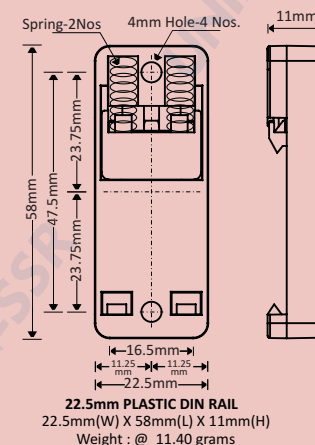
35mm DIN RAIL 22.5mm PLASTIC

35mm DIN RAIL 10mm PLASTIC

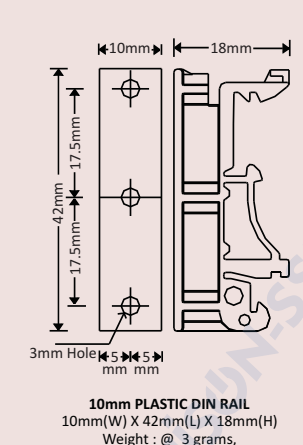
35mm DIN RAIL 42mm PLASTIC



35mm DIN RAIL 22.5mm PLASTIC



35mm DIN RAIL 10mm PLASTIC



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