

UNIVERSITI TEKNOLOGI MARA

**DIRECT NORMAL IRRADIANCE
ESTIMATION BASED ON TOTAL
RADIANCE MONITORING DATA
INPUTS**

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Preliminary Results Report submitted in
partial fulfillment of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this preliminary results report was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This preliminary results report has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Total solar radiation consists of direct normal irradiance and diffused horizontal irradiance. Direct normal irradiance can be estimated by obtained the total solar radiation. Total solar radiation can be measured by using pyranometer as pyranometer is a device that collect global solar radiation. Then, direct normal irradiance can be measured more accurately by using modified pyranometer that have the same function as pyrhelimeter. The solar radiation and ambient temperature are depending on the solar time. The more exposure of the sun, the higher solar radiation reached to the Earth's surface. The radiation was monitored at latitude of 7°N in Perlis to get the relation between total solar radiation with DNI and DHI. DNI and DHI can be obtained from the calculated models. The relation between total solar radiation with DNI and DHI can be obtained by plotting graph and the result must be in linear graph as DNI, DHI and GHI are directly proportional to each other. Due to restriction imposed by MKN, data cannot be measured on the selected site and the total solar radiation were taken from other researchers at difference places and the calculated DHI and DNI was performed using a suitable model which were Daneshyar-Paltridge-Proctor (DPP) model and the equation of Danandeh and G Mousavi respectively and the result shows that a linear correlation between G_{Bn} with DNI and DHI.

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