

LAMPIRAN

Data Suhu Rata-rata Kota Malang Bulan Januari 2017

Tgl	Suhu rata-rata (°C)											
	06.00 – 07.00	07.00 – 08.00	08.00 – 09.00	09.00 – 10.00	10.00 – 11.00	11.00 – 12.00	12.00 – 13.00	13.00 – 14.00	14.00 – 15.00	15.00 – 16.00	16.00 – 17.00	17.00 – 18.00
1	23,40	25,20	25,60	27,20	27,40	27,60	27,20	27,80	25,00	23,60	23,40	23,40
2	22,40	23,40	24,20	25,20	25,40	27,00	28,20	26,40	27,20	25,80	24,70	23,80
3	22,60	23,60	25,40	26,40	27,30	24,60	24,20	24,80	25,40	25,60	24,40	23,60
4	23,20	25,00	26,80	27,60	27,80	28,90	27,80	24,10	24,70	25,40	25,40	24,60
5	23,40	24,80	25,60	26,80	27,60	28,60	28,80	25,40	26,40	25,60	23,80	22,50
6	22,80	22,40	26,20	27,20	28,00	28,80	25,80	25,60	26,00	25,80	25,00	24,60
7	22,80	24,20	25,90	27,20	28,60	29,00	27,60	26,00	25,80	24,00	24,40	24,20
8	22,80	25,40	26,80	27,20	27,80	29,20	28,80	30,80	29,60	28,80	26,00	24,60
9	22,80	25,80	26,70	27,80	27,60	27,20	26,20	27,20	26,60	26,60	24,60	24,00
10	23,60	25,60	26,80	28,30	29,00	28,40	29,80	27,20	26,10	25,00	24,60	23,60
11	24,20	26,00	26,60	27,70	28,00	28,40	28,80	28,80	26,40	22,80	22,60	22,40
12	22,80	25,20	26,60	27,20	28,40	27,70	25,20	27,20	25,80	24,20	24,60	23,80
13	23,20	25,00	25,60	26,60	28,00	28,70	28,40	25,90	26,70	23,80	23,80	23,40
14	21,80	22,50	23,60	25,40	27,60	28,80	28,10	29,40	26,00	26,00	23,80	23,60
15	21,00	21,60	22,40	23,60	24,80	25,40	25,80	25,80	26,00	25,40	23,20	23,00
16	22,20	23,20	24,60	25,40	26,60	26,30	24,80	24,60	23,40	22,40	22,50	22,60
17	22,00	24,20	26,00	26,40	26,60	26,10	26,60	26,70	24,40	23,40	21,60	21,80
18	21,80	22,80	24,20	25,80	27,00	27,20	28,00	27,20	27,40	25,80	24,20	24,00
19	23,00	23,80	25,00	26,00	27,00	28,00	26,40	25,40	24,00	23,20	23,00	22,80
20	22,00	23,40	25,10	25,60	26,00	26,90	27,40	27,80	26,80	26,00	25,00	24,40
21	23,20	25,20	27,00	27,60	28,30	27,60	25,20	22,60	22,20	23,20	23,20	23,30
22	22,40	24,00	25,80	26,60	27,80	28,20	25,00	25,00	25,40	24,20	24,20	23,70
23	22,40	24,00	25,50	26,40	25,60	25,00	23,30	23,00	23,00	22,60	21,90	21,80
24	22,40	25,40	26,40	27,20	27,50	27,40	27,40	28,10	27,20	25,80	22,30	22,10
25	22,20	23,70	25,40	26,40	27,20	27,40	26,30	24,10	26,00	23,00	22,60	22,60
26	21,90	23,80	25,40	25,60	26,80	26,60	26,60	26,80	26,00	25,00	22,60	22,70
27	23,00	24,80	27,00	27,60	27,80	28,60	29,40	29,40	29,00	26,20	24,40	23,30
28	23,00	24,40	25,80	26,80	27,40	28,00	27,60	28,40	26,30	24,80	23,20	22,10
29	22,80	23,80	24,40	25,20	26,60	27,60	27,10	23,60	22,60	22,40	21,80	21,70
30	21,40	22,70	24,60	26,40	27,40	27,60	27,60	28,00	28,00	27,40	25,80	24,00
31	21,80	23,40	24,00	25,20	25,80	25,80	25,40	24,00	23,40	23,80	23,60	23,40

Data Intensitas Radiasi Matahari Kota Malang Bulan Januari 2017

Tgl	Intensitas Radiasi Matahari (W/m ²)											
	06.00	07.00	08.00	09.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
	–	–	–	–	–	–	–	–	–	–	–	–
	07.00	08.00	09.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
1	83,8	435,4	424,3	766,9	551,8	416,4	216,6	624,2	327,2	99,5	47,2	11,9
2	149,3	202,9	284,1	433,9	571,1	300,8	591,9	490	517,4	382,2	152,2	20,3
3	195,7	273,3	436,8	461,1	840,2	531,1	212,1	451,8	260,8	176,2	125,9	27,1
4	195,7	401,8	436,8	461,1	840,2	531,1	212,1	451,8	260,8	176,2	125,9	27,1
5	135,6	225,7	558,7	828,5	538,9	894,1	398,6	278,7	158,9	100,6	39,4	9,2
6	92,9	225,7	558,7	828,5	538,9	894,1	398,6	278,7	158,9	100,6	39,4	9,2
7	120,7	233,8	420,5	808,2	804,6	837,4	390,1	424,8	71,8	82,2	67,8	24,9
8	173,5	418,7	664,3	562,5	783,8	873,7	620,2	809,1	706,2	491,1	159,1	32,6
9	183	425,6	635,5	827,9	916,3	534,1	136,8	508	400,1	181	22,5	4,9
10	193,6	444,7	636,3	821,2	717,3	458,2	954,4	338,1	73,5	108,6	47,7	9,3
11	114,2	411,3	596,9	706,6	652,1	991,5	886,2	594,7	150,3	12,3	3,6	1,9
12	155,4	404	674,1	631	676,7	269,1	221,7	351,2	365,6	87,9	46	6,2
13	83,3	387,8	506,1	580,5	661,4	851,1	608,3	313,7	357,5	153,4	34	8,7
14	35,8	175,4	308,4	611,1	916,7	784,2	420,8	606	371	114,4	126,2	34,1
15	73,5	107,5	275,1	357,6	362,3	436,7	556,6	438,2	375,6	165,7	43,3	28,4
16	116,6	144,9	284,5	372,8	635,4	748,8	423,2	226,1	147,4	51	78,9	13
17	93,6	359,1	630,4	669,5	491,5	462,5	670	545,9	296,9	84,4	5,4	2,4
18	139,8	273,3	421,2	757,9	720,3	646,8	758,7	339,2	311,9	162,1	64,6	24,4
19	67,5	293,3	484,7	492,3	624,3	865,7	175,6	252,3	90,6	48,8	70,8	13,5
20	149,6	274,7	533	530	526,4	583,3	682	612	370,1	71,3	66,6	25,2
21	170	438,2	598,6	773,1	883,6	307,7	117,6	27,8	53,7	87,8	45,8	22,5
22	111	272,4	520,2	774,6	910	534,7	355,8	189,9	152,3	78,5	44,7	16
23	180,7	271,5	528,6	709,8	479,1	250,8	138,3	149,1	97,5	77,3	96,1	16,1
24	112,4	459,4	647,8	723,8	514,5	686,7	602,9	820,2	308,8	97,9	11,1	2,4
25	85	177,5	490,4	570,2	698,5	691	419,4	151	68,7	15,2	11,7	4,3
26	146,3	271,2	369,5	448,8	805,7	716,8	535,3	527,3	210,2	104,5	18,5	9,9
27	93,3	420,1	709,9	819,7	883,2	111,9	988,5	730,2	559,4	107,3	21,2	7,2
28	102,9	282,5	447,5	544	649,1	494,2	371,3	397,1	132,1	139,8	39,9	5,2
29	69,7	219	167,2	232,7	438,7	607	314,6	126,9	104,9	59,4	9,1	3,3
30	70,6	224,2	480,7	528,4	701,7	861,8	619,6	433,3	348,7	230,9	126,4	27,6
31	50,5	255,3	298,1	443,1	360,7	351,2	325,5	226,8	142,6	156,1	81,9	19,4

Lampiran 2. Listing Program MATLAB

Program ELM

```

clear all
clc
close all

% Memanggil Data dari Excel
Data=xlsread('datatugasakhir.xlsx');

% Normalisasi Data Training dan Data Testing

% Mencari nilai min dan max dari data training (Data)
Xt1 = min (Data);
Xt1 = repmat(Xt1,length(Data),1);
Xt2 = max (Data);
Xt2 = repmat(Xt2,length(Data),1);

% Normalisasi data training
normal_training = (Data-Xt1)./(Xt2-Xt1);
training_input = normal_training;

% Program Training ELM

% Menentukan jumlah hidden neuron dan fungsi aktivasi dari ELM
for n=1:3
MSE_Training_ELM=[];
TrainingTime=[];

for m=1:50

NumberofHiddenNeurons =m;
ActivationFunction = 'sigmoid';

training_data=training_input;
T = training_data(1:316,3)';
P = training_data(1:316,1:2)';

NumberofTrainingData=size(P,2)
NumberofInputNeurons=size(P,1)

% Menghitung weights & biases
start_time_training=cputime;

% Membangkitkan input weight (w_i) and biases secara acak
InputWeight=randn(NumberofHiddenNeurons,NumberofInputNeurons)*2-1;
BiasofHiddenNeurons=rand(NumberofHiddenNeurons,1);
tempH=InputWeight*P;
ind=ones(1,NumberofTrainingData);
BiasMatrix=BiasofHiddenNeurons(:,ind);
tempH=tempH+BiasMatrix;

% Hitung hidden neuron output untuk matrix H
switch lower(ActivationFunction)
case {'sig','sigmoid'}
%%%%%%%%% Sigmoid
H = 1./(1+exp(-tempH));
End

```

```

clear tempH;

% Menghitung output weights
OutputWeight=pinv(H') * T';
end_time_training=cputime;
temp_TrainingTime=end_time_training-start_time_training

Y=(H' * OutputWeight)'; % Y: Output dari data training

% Program denormalisasi data training ELM
Hasil_Training=Y
elemen=Hasil_Training;
denorm_training = (elemen)*(Xt2(1,3)-Xt1(1,3))+Xt1(1,3);
FinalOutput_Training=denorm_training
a=T ; % a=data target
b=Hasil_Training ; % b=data hasil training
temp_MSE_Training_ELM = mse (b-a)
x1=Data(1:316,3)';
y1=FinalOutput_Training ;
clear H;
MSE_Training_ELM=[MSE_Training_ELM;temp_MSE_Training_ELM];
TrainingTime=[TrainingTime;temp_TrainingTime];
end

end
% Gambar Training
figure (1)
hold on
plot(x1(1,1:316), 'bo-')
hold off
hold on
plot (y1(1,1:316), 'r*-')
hold off
legend ('Data Aktual', 'Training ELM ')
title('Training ELM','color',[0 0 1],'fontweight','bold','fontsize',12);
xlabel ('Data ke-')
ylabel ('Intensitas Radiasi Matahari (W/m2)')
% Hasil Training

% Menampilkan Error ELM
for ij=1:316
    E_Training(ij)=(abs(x1(1,ij)-y1(1,ij)));
end

TTr=x1(1,1:316);
YYr=y1(1,1:316);
Training_ELM=[TTr' YYr' E_Training'];
fprintf('\n')
fprintf(' Hasil Training Menggunakan ELM \n')
disp(Training_ELM)
fprintf('-----\n',ij)

% Memanggil Data dari Excel
>Data=xlsread('datatugasakhir.xlsx');

% Normalisasi Data Training dan Data Testing

Lama =Data(317:372,1);
Suhu =Data(317:372,2);
Intensitas =Data(317:372,3);

```

```

Data_testing =[Lama Suhu Intensitas];

% Mencari nilai min dan max dari data testing (Data_testing)
Yt1  = min (Data_testing);
Yt1  = repmat(Yt1,length(Data_testing),1);
Yt2  = max (Data_testing);
Yt2  = repmat(Yt2,length(Data_testing),1);

% Normalisasi data testing
normal_testing =(Data_testing-Yt1)./(Yt2-Yt1);
testing_input  = normal_testing;

% Program Testing ELM

% Menentukan jumlah hidden neuron dan fungsi aktivasi dari ELM
for n=1:3
MSE_Testing_ELM=[];
TestingTime=[];

for m=1:50

NumberofHiddenNeurons =m;
ActivationFunction = 'sigmoid';

testing_data=testing_input;
T_test = testing_data(1:56,3)';
P_test = testing_data(1:56,1:2)';

NumberofTestingData=size(P_test,2)
NumberofInputNeurons=size(P_test,1)

% Menghitung weights & biases
start_time_testing=cputime;

% Membangkitkan input weight (w_i) and bias secara acak
tempH_test=InputWeight*P_test;
ind=ones(1,NumberofTestingData);
BiasMatrix=BiasofHiddenNeurons(:,ind);
tempH_testing=tempH_test+BiasMatrix;

% Hitung hidden neuron output untuk matrix H
switch lower(ActivationFunction)
case {'sig','sigmoid'}
%%%%%%%%% Sigmoid
H_test = 1./(1+exp(-tempH_testing));
End

clear tempH_testing;

% Menghitung output weights
OutputWeight=pinv(H_test') * T_test';
end_time_testing=cputime;
temp_TestingTime=end_time_testing-start_time_testing

Y=(H_test' * OutputWeight)'; % Y: Output dari data testing

% Program denormalisasi data training ELM
Hasil_Testing=Y

```



```

elemen1=Hasil_Testing;
denorm_testing = (elemen1)*(Yt2(1,3)-Yt1(1,3))+Yt1(1,3);
FinalOutput_Testing=denorm_testing
a1=T_test ; % a1=data target
b1=Hasil_Testing ; % b1=data hasil testing
temp_MSE_Testing_ELM = mse (b1-a1)
x11=Data_testing(1:56,3)';
y11=FinalOutput_Testing ;
clear H_test;
MSE_Testing_ELM=[MSE_Testing_ELM;temp_MSE_Testing_ELM];
TestingTime=[TestingTime;temp_TestingTime];
end

end

% Gambar Testing
Sumbu_X = [1:72]'; %untuk urutan data pada sumbu x
plot(x11, 'g-');
hold on
plot(y11, 'r-');
xlabel('Time(Hours)');
ylabel('Solar Radiation (W/m2)');
title('Results of Solar Radiation Forecasting');
legend('Actual','ELM');
% Hasil Testing

rmse=sqrt(sum((x11(:)-y11(:)).^2)/numel(x11));
error=abs(y11(:)-x11(:));
MAE=sum(error(:))/numel(error);

% Menampilkan Error ELM

TTr1=x11(1,1:56);
YYr1=y11(1,1:56);

for ij=1:56
    E_Testing(ij)=(abs(x11(1,ij)-y11(1,ij)));
end

Testing_ELM=[TTr1' YYr1' E_Testing'];
fprintf('\n')
fprintf(' Hasil Testing Menggunakan ELM \n')
disp(Testing_ELM)
fprintf('-----\n',ij)

x11=x11';
y11=y11';

```

Program Regresi linier berganda

```

clear all
clc
close all

DataRegresi = xlsread('dataregresi.xlsx');

%Pembagian Data Training dan Data Testing 80%-20%
data_training = DataRegresi(1:316,:);
data_tes = DataRegresi(317:372,:);

%Pembagian Data Testing untuk Suhu dan Lama Penyinaran Matahari
LPM_tes = data_tes(:,2);
T_tes = data_tes(:,3);

%Pembagian Data Training
n = data_training(:,1);
x1 = data_training(:,2);%Data Lama Penyinaran Matahari
x2 = data_training(:,3);%Data Suhu
y = data_training(:,4); %Data Intensitas Radiasi Matahari

JMLn = length(n); %Jumlah data
JMLx1 = sum(x1); %Jumlah Lama Penyinaran Matahari Data Training
JMLx2 = sum(x2); %Jumlah Suhu Data Training

x1x2 = x1.*x2; %Perkalian LPM dan T
JMLx1x2 = sum(x1x2); %Jumlah Perkalian LPM dan T

x1sqre=x1.^2; %Mengkuadratkan nilai LPM
x2sqre=x2.^2; %Mengkuadratkan nilai T

JMLx1sqre = sum(x1sqre); %Jumlah LPM kuadrat
JMLx2sqre = sum(x2sqre); %Jumlah T kuadrat
JMLy = sum(y); %Jumlah Intensitas Radiasi Matahari Data Training

x1y = x1.*y; %Perkalian Data LPM dan IRM
x2y = x2.*y; %Perkalian Data T dan IRM

JMLx1y = sum(x1y); %Jumlah perkalian data LPM dan IRM
JMLx2y = sum(x2y); %Jumlah perkalian data T dan IRM

%Membuat Matrix dari hasil perhitungan di atas
A=[JMLn JMLx1 JMLx2; JMLx1 JMLx1sqre JMLx1x2; JMLx2 JMLx1x2 JMLx2sqre];
G = [JMLy; JMLx1y; JMLx2y];
Ai = inv(A);
B = Ai * G
Bt = B';

%Nilai koefisien Regresi linier berganda
b0 = Bt(1,1);
b1 = Bt(1,2);
b2 = Bt(1,3);
disp('Persamaan Regresi linier berganda');
disp('Y = b0 + b1*X1 + b2*X2');
b0, b1 ,b2

%Melakukan peramalan dimana kita memasukan data testing ke dalam
%persamaan regresi linier berganda yang telah ditemukan dari perhitungan

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```
%sebelumnya62
Output = b0 + (b1*LPM_tes) + (b2*T_tes);

%Perhitungan error peramalan regresi linier berganda
Data_Aktual = data_tes(:,4);
rmse1=sqrt(sum((Data_Aktual(:)-Output(:)).^2)/numel(Data_Aktual));
error1=abs(Output(:) - Data_Aktual(:));
mape1=sum(error1(:))/numel(error1);

%Plot Regresi linier berganda
Sumbu_X = [1:72]';
plot(Output, 'b-');
hold on
plot(Data_Aktual, 'g-');
xlabel('Data');
ylabel('Solar Radiation (W/m2)');
title('Results of Solar Radiation Forecasting');
legend('MR', 'Actual');
```

Lampiran 3. Data Hasil Peramalan

ELM Variasi Data BMKG

Suhu	LPM	IRM	70%- 30%	75%- 25%	80%- 20%	85%- 15%	90%- 10%	95%- 5%
25,40	0,00	152,30	259,60					
24,20	0,00	78,50	118,13					
24,20	0,00	44,70	118,13					
23,70	0,00	16,00	121,02					
22,40	0,00	180,70	57,44					
24,00	0,00	271,50	110,84					
25,50	0,30	528,60	524,30					
26,40	1,00	709,80	674,21					
25,60	0,30	479,10	438,45					
25,00	0,00	250,80	252,36					
23,30	0,00	138,30	122,70					
23,00	0,00	149,10	92,08					
23,00	0,00	97,50	92,08					
22,60	0,00	77,30	53,60					
21,90	0,00	96,10	60,83					
21,80	0,00	16,10	39,05					
22,40	0,50	112,40	112,46					
25,40	1,00	459,40	462,71					
26,40	1,00	647,80	674,21					
27,20	1,00	723,80	795,37	723,64				
27,50	0,60	514,50	557,39	512,89				
27,40	0,40	686,70	700,61	720,47				
27,40	0,00	602,90	480,18	465,79				
28,10	0,80	820,20	823,34	821,03				
27,20	0,50	308,80	291,69	308,80				
25,80	0,00	97,90	222,93	236,56				
22,30	0,00	11,10	64,32	46,93				
22,10	0,00	2,40	75,49	65,49				
22,20	0,00	85,00	71,45	57,39				
23,70	0,20	177,50	168,44	178,50				
25,40	0,20	490,40	479,26	487,60				
26,40	0,30	570,20	395,79	569,03				
27,20	0,40	698,50	752,51	674,90				
27,40	0,60	691,00	684,26	697,31				
26,30	0,20	419,40	449,65	447,82				
24,10	0,00	151,00	112,47	121,77				
26,00	0,00	68,70	228,17	251,21				
23,00	0,00	15,20	92,08	83,71				
22,60	0,00	11,70	53,60	34,78	59,69			
22,60	0,00	4,30	53,60	34,78	59,69			
21,90	0,00	146,30	60,83	57,80	83,67			
23,80	0,10	271,20	271,58	271,19	270,96			
25,40	0,10	369,50	368,47	369,50	369,29			
25,60	0,00	448,80	239,93	244,13	367,17			

26,80	0,40	805,70	780,06	808,98	805,47			
26,60	0,00	716,80	475,50	472,58	499,33			
26,60	0,00	535,30	475,50	472,58	499,33			
26,80	0,00	527,30	590,01	560,34	650,51			
26,00	0,10	210,20	211,96	210,28	210,03			
25,00	0,00	104,50	252,36	259,62	195,35			
22,60	0,00	18,50	53,60	34,78	59,69			
22,70	0,00	9,90	58,45	41,80	79,92			
23,00	0,20	93,30	101,27	91,92	93,14			
24,80	1,00	420,10	419,23	420,10	419,95			
27,00	1,00	709,90	681,80	709,96	709,82			
27,60	1,00	819,70	775,30	819,79	819,55			
27,80	0,90	883,20	884,54	883,01	883,04	883,08		
28,60	1,00	111,90	121,83	111,88	111,74	111,92		
29,40	1,00	988,50	986,23	988,54	988,36	988,57		
29,40	0,90	730,20	732,49	730,22	730,14	730,20		
29,00	0,90	559,40	555,53	559,22	559,25	559,28		
26,20	0,30	107,30	310,67	108,73	107,11	107,22		
24,40	0,00	21,20	142,19	159,93	90,57	105,94		
23,30	0,00	7,20	122,70	118,33	80,21	80,10		
23,00	0,00	102,90	92,08	83,71	89,60	107,25		
24,40	0,30	282,50	288,27	282,43	282,37	282,43		
25,80	0,50	447,50	451,02	447,39	447,36	447,34		
26,80	0,60	544,00	541,76	544,13	543,84	543,98		
27,40	0,90	649,10	649,58	649,41	648,89	649,11		
28,00	0,60	494,20	481,90	493,62	494,10	494,25		
27,60	0,00	371,30	262,70	306,67	384,34	370,34		
28,40	0,50	397,10	400,43	397,49	396,95	396,99		
26,30	0,00	132,10	310,16	333,64	233,02	150,62		
24,80	0,00	139,80	220,30	234,59	99,54	128,50		
23,20	0,00	39,90	115,12	110,05	78,25	79,56		
22,10	0,00	5,20	75,49	65,49	37,14	-14,30	18,26	
22,80	0,20	69,70	65,29	70,51	69,40	69,54	69,70	
23,80	0,40	219,00	217,94	219,01	218,80	218,99	218,96	
24,40	0,00	167,20	142,19	159,93	90,57	105,94	173,47	
25,20	0,00	232,70	266,19	267,29	308,45	320,22	335,20	
26,60	0,00	438,70	475,50	472,58	499,33	429,99	438,78	
27,60	0,10	607,00	604,43	606,94	606,80	606,91	607,02	
27,10	0,20	314,60	327,48	316,39	314,38	314,58	314,62	
23,60	0,00	126,90	125,14	122,08	130,55	130,70	119,01	
22,60	0,00	104,90	53,60	34,78	59,69	145,78	145,63	
22,40	0,00	59,40	57,44	38,05	14,44	80,80	30,22	
21,80	0,00	9,10	39,05	37,39	60,71	37,45	25,40	
21,70	0,00	3,30	11,65	9,70	-17,13	-5,26	8,05	
21,40	0,00	70,60	67,74	71,31	70,71	70,83	70,44	
22,70	0,00	224,20	58,45	41,80	79,92	153,79	205,45	
24,60	0,20	480,70	492,00	480,75	480,49	480,62	480,66	
26,40	0,20	528,40	495,66	500,43	528,18	528,37	528,41	
27,40	0,60	701,70	684,26	697,31	701,56	701,75	701,67	
27,60	0,80	861,80	857,91	861,02	861,61	861,81	861,81	861,80

27,60	0,40	619,60	591,39	605,86	619,42	619,64	619,58	619,60
28,00	0,00	433,30	398,62	393,48	390,49	391,05	390,98	391,00
28,00	0,00	348,70	398,62	393,48	390,49	391,05	390,98	391,00
27,40	0,00	230,90	480,18	465,79	204,70	232,42	230,90	230,90
25,80	0,00	126,40	222,93	236,56	285,87	268,57	279,14	279,43
24,00	0,00	27,60	110,84	116,66	179,91	174,40	180,75	184,17
21,80	0,00	50,50	39,05	37,39	60,71	37,45	25,40	50,50
23,40	0,00	255,30	126,77	122,76	90,36	90,68	133,08	139,10
24,00	0,00	298,10	110,84	116,66	179,91	174,40	180,75	184,17
25,20	0,00	443,10	266,19	267,29	308,45	320,22	335,20	443,10
25,80	0,00	360,70	222,93	236,56	285,87	268,57	279,14	279,43
25,80	0,00	351,20	222,93	236,56	285,87	268,57	279,14	279,43
25,40	0,00	325,50	259,60	259,11	378,76	382,67	330,41	325,50
24,00	0,00	226,80	110,84	116,66	179,91	174,40	180,75	184,17
23,40	0,00	142,60	126,77	122,76	90,36	90,68	133,08	139,10
23,80	0,00	156,10	116,34	116,36	171,77	167,85	148,78	156,10
23,60	0,00	81,90	125,14	122,08	130,55	130,70	119,01	81,90
23,40	0,00	19,40	126,77	122,76	90,36	90,68	133,08	139,10

Regresi linier berganda Variasi Data BMKG

Suhu	LPM	Aktual	70%- 30%	75%- 25%	80%- 20%	85%- 15%	90%- 10%	95%- 5%
25,40	0,00	152,30	256,51					
24,20	0,00	78,50	171,89					
24,20	0,00	44,70	171,89					
23,70	0,00	16,00	136,63					
22,40	0,00	180,70	44,95					
24,00	0,00	271,50	157,78					
25,50	0,30	528,60	350,78					
26,40	1,00	709,80	617,75					
25,60	0,30	479,10	357,83					
25,00	0,00	250,80	228,30					
23,30	0,00	138,30	108,42					
23,00	0,00	149,10	87,26					
23,00	0,00	97,50	87,26					
22,60	0,00	77,30	59,06					
21,90	0,00	96,10	9,70					
21,80	0,00	16,10	2,64					
22,40	0,50	112,40	190,32					
25,40	1,00	459,40	547,23					
26,40	1,00	647,80	617,75					
27,20	1,00	723,80	674,16	675,29				
27,50	0,60	514,50	579,03	579,49				
27,40	0,40	686,70	513,83	514,09				
27,40	0,00	602,90	397,54	397,28				
28,10	0,80	820,20	679,48	679,93				
27,20	0,50	308,80	528,80	529,28				
25,80	0,00	97,90	284,71	285,19				
22,30	0,00	11,10	37,90	40,00				
22,10	0,00	2,40	23,80	25,99				
22,20	0,00	85,00	30,85	33,00				
23,70	0,20	177,50	194,77	196,48				
25,40	0,20	490,40	314,65	315,57				
26,40	0,30	570,20	414,24	414,83				
27,20	0,40	698,50	499,73	500,07				
27,40	0,60	691,00	571,98	572,49				
26,30	0,20	419,40	378,12	378,62				
24,10	0,00	151,00	164,83	166,10				
26,00	0,00	68,70	298,82	299,20				
23,00	0,00	15,20	87,26	89,04				
22,60	0,00	11,70	59,06	61,02	58,99			
22,60	0,00	4,30	59,06	61,02	58,99			
21,90	0,00	146,30	9,70	11,98	9,07			
23,80	0,10	271,20	172,75	174,29	173,76			
25,40	0,10	369,50	285,58	286,37	287,86			
25,60	0,00	448,80	270,61	271,18	272,92			
26,80	0,40	805,70	471,52	472,05	475,29			
26,60	0,00	716,80	341,13	341,24	344,24			

26,60	0,00	535,30	341,13	341,24	344,24			
26,80	0,00	527,30	355,23	355,25	358,50			
26,00	0,10	210,20	327,89	328,41	330,65			
25,00	0,00	104,50	228,30	229,15	230,14			
22,60	0,00	18,50	59,06	61,02	58,99			
22,70	0,00	9,90	66,11	68,03	66,12			
23,00	0,20	93,30	145,41	147,45	145,91			
24,80	1,00	420,10	504,92	507,16	507,86			
27,00	1,00	709,90	660,06	661,27	664,74			
27,60	1,00	819,70	702,37	703,31	707,53			
27,80	0,90	883,20	687,40	688,12	692,60	695,35		
28,60	1,00	111,90	772,89	773,36	778,84	782,68		
29,40	1,00	988,50	829,30	829,40	835,89	842,25		
29,40	0,90	730,20	800,23	800,20	806,69	814,48		
29,00	0,90	559,40	772,02	772,18	778,17	784,70		
26,20	0,30	107,30	400,14	400,82	403,31	409,64		
24,40	0,00	21,20	185,99	187,12	187,35	192,33		
23,30	0,00	7,20	108,42	110,06	108,91	110,43		
23,00	0,00	102,90	87,26	89,04	87,51	88,09		
24,40	0,30	282,50	273,21	274,72	274,94	275,62		
25,80	0,50	447,50	430,08	431,20	433,18	435,38		
26,80	0,60	544,00	529,67	530,46	533,69	537,60		
27,40	0,90	649,10	659,20	660,09	664,07	665,57		
28,00	0,60	494,20	614,29	614,52	619,26	626,95		
27,60	0,00	371,30	411,64	411,29	415,55	430,59		
28,40	0,50	397,10	613,42	613,34	618,59	628,97		
26,30	0,00	132,10	319,97	320,22	322,84	333,80		
24,80	0,00	139,80	214,20	215,14	215,87	222,11		
23,20	0,00	39,90	101,37	103,05	101,78	102,98		
22,10	0,00	5,20	23,80	25,99	23,33	21,08	23,49	
22,80	0,20	69,70	131,31	133,44	131,65	128,72	129,87	
23,80	0,40	219,00	259,97	261,89	261,36	258,71	257,75	
24,40	0,00	167,20	185,99	187,12	187,35	192,33	188,24	
25,20	0,00	232,70	242,40	243,16	244,40	251,90	245,55	
26,60	0,00	438,70	341,13	341,24	344,24	356,14	345,83	
27,60	0,10	607,00	440,72	440,49	444,75	458,36	445,58	
27,10	0,20	314,60	434,53	434,67	438,29	448,89	437,89	
23,60	0,00	126,90	129,57	131,07	130,30	132,76	130,94	
22,60	0,00	104,90	59,06	61,02	58,99	58,31	59,31	
22,40	0,00	59,40	44,95	47,01	44,73	43,42	44,98	
21,80	0,00	9,10	2,64	4,98	1,94	-1,26	2,00	
21,70	0,00	3,30	-4,41	-2,03	-5,19	-8,70	-5,16	
21,40	0,00	70,60	-25,56	-23,04	-26,59	-31,04	-26,65	
22,70	0,00	224,20	66,11	68,03	66,12	65,75	66,47	
24,60	0,20	480,70	258,24	259,53	260,01	262,75	258,81	
26,40	0,20	528,40	385,17	385,63	388,37	396,77	387,75	
27,40	0,60	701,70	571,98	572,49	576,48	582,28	571,86	
27,60	0,80	861,80	644,23	644,90	649,13	652,70	642,43	643,46
27,60	0,40	619,60	527,94	528,10	532,34	541,64	529,95	532,49
28,00	0,00	433,30	439,85	439,31	444,07	460,38	446,12	450,29

28,00	0,00	348,70	439,85	439,31	444,07	460,38	446,12	450,29
27,40	0,00	230,90	397,54	397,28	401,29	415,70	403,14	407,15
25,80	0,00	126,40	284,71	285,19	287,19	296,57	288,53	292,08
24,00	0,00	27,60	157,78	159,10	158,83	162,55	159,59	162,63
21,80	0,00	50,50	2,64	4,98	1,94	-1,26	2,00	4,42
23,40	0,00	255,30	115,47	117,06	116,04	117,87	116,61	119,49
24,00	0,00	298,10	157,78	159,10	158,83	162,55	159,59	162,63
25,20	0,00	443,10	242,40	243,16	244,40	251,90	245,55	248,93
25,80	0,00	360,70	284,71	285,19	287,19	296,57	288,53	292,08
25,80	0,00	351,20	284,71	285,19	287,19	296,57	288,53	292,08
25,40	0,00	325,50	256,51	257,17	258,66	266,79	259,87	263,32
24,00	0,00	226,80	157,78	159,10	158,83	162,55	159,59	162,63
23,40	0,00	142,60	115,47	117,06	116,04	117,87	116,61	119,49
23,80	0,00	156,10	143,68	145,09	144,56	147,66	145,26	148,25
23,60	0,00	81,90	129,57	131,07	130,30	132,76	130,94	133,87
23,40	0,00	19,40	115,47	117,06	116,04	117,87	116,61	119,49

ELM Variasi Data NOAA

Intensitas Radiasi Matahari (W/m²)					
70%-30%	75%-25%	80%-20%	85%-15%	90%-10%	95%-5%
35,481	34,440	41,381	28,055	29,175	34,772
26,635	26,789	31,241	25,461	21,707	28,149
18,030	19,292	21,370	21,815	15,424	22,054
15,912	17,423	18,846	20,605	14,063	20,719
14,355	15,886	16,945	19,797	13,117	19,500
12,515	14,141	14,605	18,508	12,071	18,349
12,818	14,304	14,967	18,805	12,259	18,319
13,040	14,429	15,233	19,020	12,394	18,293
12,455	13,323	14,265	18,702	12,191	16,941
28,557	28,829	34,141	31,449	21,534	26,309
50,245	53,059	59,738	51,575	37,965	48,246
44,582	46,502	52,463	46,407	32,221	42,792
44,717	46,159	53,906	44,522	34,916	41,641
45,715	47,388	55,021	45,788	35,504	42,659
45,179	47,020	53,809	46,260	33,931	42,424
45,347	49,893	55,208	52,554	35,480	39,924
28,967	32,811	34,641	37,259	21,795	22,768
28,549	32,411	34,126	36,954	21,634	22,306
27,075	32,515	30,351	36,540	19,049	13,680
11,316	8,975	9,978	15,351	13,679	9,691
8,791	4,463	4,163	11,036	14,816	7,323
13,733	14,845	16,064	19,676	12,801	18,204
9,625	12,033	10,964	15,881	10,297	17,394
13,694	16,170	16,042	18,158	12,640	20,195
13,061	15,884	15,230	17,378	12,206	19,822
8,417	11,934	9,653	14,304	9,179	16,842
4,933	3,468	0,672	3,650	5,418	11,733
11,532	-5,897	-3,461	-11,379	4,700	9,398
11,517	-0,004	3,673	-5,330	-1,221	11,957
14,147	0,888	8,246	-4,133	-4,583	13,544
14,063	2,619	10,751	-0,763	-4,699	12,744
16,558	2,471	14,862	1,082	-6,574	13,645
14,083	5,012	14,939	5,534	-2,884	9,429
104,662	114,305	117,009	126,218	142,617	105,174
180,171	184,089	177,473	191,219	177,944	185,542
209,829	209,920	212,907	213,148	201,377	215,444
231,758	227,644	241,371	232,875	220,707	242,251
267,044	259,719	278,313	258,270	240,395	270,866
278,705	270,892	290,446	267,446	247,497	279,403
266,565	259,417	277,601	257,666	239,943	270,020
165,084	158,415	188,254	133,258	108,011	117,198
26,718	25,687	27,231	14,510	20,955	23,981
19,996	20,902	20,197	13,251	16,596	18,560
16,290	18,447	16,840	13,096	14,485	15,130
13,347	16,513	14,530	13,295	12,762	12,368

11,042	14,942	12,827	13,448	11,032	10,935
8,192	11,913	10,423	12,045	7,273	8,739
8,591	10,304	10,994	10,820	5,189	6,741
10,821	12,487	14,309	13,963	10,714	1,841
13,659	13,289	16,243	12,826	15,482	-3,410
13,000	11,444	17,275	14,911	14,934	-6,190
12,562	10,426	17,731	15,874	12,954	-5,537
12,257	10,199	17,486	15,703	11,409	-4,069
12,334	9,151	17,667	15,058	8,351	-1,971
12,941	8,256	18,397	14,779	6,834	-1,289
14,157	-7,183	5,237	-22,559	49,273	-8,604
82,623	109,542	58,070	140,843	125,637	75,660
163,904	169,152	157,150	178,188	162,089	169,141
230,608	229,988	230,655	215,181	202,339	223,050
277,897	277,150	281,448	252,112	238,236	255,560
224,810	220,631	236,986	229,914	219,857	240,464
252,100	243,148	267,257	250,203	234,586	268,121
255,187	244,832	272,203	253,179	236,689	274,245
253,715	244,037	269,843	251,784	235,733	271,297
150,856	137,515	172,529	129,905	124,627	133,773
9,942	14,298	11,631	13,963	9,954	14,919
6,992	10,106	8,248	9,975	5,246	10,085
9,714	5,064	7,711	2,473	-0,510	10,340
9,161	7,528	9,746	6,685	1,413	8,499
9,509	10,884	12,759	12,339	6,700	4,452
10,747	10,958	14,896	13,925	8,702	0,974
11,001	10,152	15,327	13,658	7,466	0,994
11,695	8,009	14,961	10,533	2,544	4,531
12,625	6,235	14,155	7,012	-0,924	7,825
12,119	7,168	14,632	8,920	0,795	6,115
12,939	7,440	17,021	11,712	2,719	3,200
12,344	9,586	17,781	15,632	10,053	-3,409
12,980	9,287	18,893	16,618	12,268	-6,446
13,555	8,469	20,043	17,407	13,000	-8,315
31,797	14,998	30,057	-39,079	-5,982	-4,893
115,795	114,038	104,588	120,944	92,570	125,341
168,368	163,803	176,889	140,362	119,237	157,878
168,811	162,813	196,102	123,720	97,762	125,280
132,103	118,549	157,547	82,427	67,012	92,421
243,838	240,848	249,061	234,573	220,685	242,629
169,658	178,409	173,089	194,411	190,127	179,256
190,528	193,901	194,042	204,565	195,773	199,775
200,418	201,890	203,785	209,110	198,635	208,263
137,004	126,536	161,003	97,065	89,829	91,033
20,689	21,017	20,050	11,141	16,881	16,180
15,863	17,901	16,246	12,246	14,433	12,373
15,815	17,825	16,185	12,146	14,440	11,985
14,296	16,307	15,184	12,032	14,048	7,306
11,874	13,642	14,654	13,612	12,631	1,957
12,542	14,284	14,806	13,136	13,353	2,521

Regresi linier berganda Variasi Data NOAA

Intensitas Radiasi Matahari (W/m²)					
70%-30%	75%-25%	80%-20%	85%-15%	90%-10%	95%-5%
30,908	27,524	26,029	29,172	28,946	26,051
28,710	25,261	23,647	27,018	26,700	23,707
23,893	20,472	18,701	22,337	21,868	18,829
21,758	18,377	16,552	20,267	19,740	16,707
21,435	18,029	16,178	19,948	19,403	16,340
19,299	15,934	14,029	17,878	17,275	14,219
20,709	17,294	15,410	19,239	18,667	15,584
21,716	18,265	16,397	20,211	19,662	16,559
24,818	21,221	19,377	23,196	22,706	19,508
52,115	47,730	46,400	49,584	49,759	46,205
79,815	74,628	73,818	76,361	77,209	73,293
78,665	73,448	72,578	75,235	76,037	72,073
65,412	60,736	59,711	62,460	62,985	59,349
67,930	63,165	62,177	64,890	65,472	61,787
73,147	68,161	67,230	69,917	70,605	66,783
64,970	60,300	59,162	62,141	62,820	59,118
54,594	50,112	48,713	52,085	52,478	48,802
53,284	48,849	47,430	50,821	51,185	47,535
48,049	43,861	42,301	45,893	46,324	42,771
42,642	38,235	36,550	40,359	40,216	36,495
36,154	31,906	30,082	34,082	33,771	30,107
24,738	21,180	19,356	23,127	22,646	19,484
10,113	7,037	4,974	9,004	8,184	5,271
11,384	8,370	6,391	10,255	9,495	6,663
7,758	4,873	2,839	6,755	5,914	3,153
0,142	-2,581	-4,792	-0,620	-1,664	-4,382
-15,513	-17,932	-20,526	-15,788	-17,257	-19,916
-29,133	-31,285	-34,210	-28,983	-30,821	-33,426
-37,552	-39,334	-42,342	-37,093	-39,098	-41,469
-45,005	-46,523	-49,642	-44,286	-46,458	-48,685
-47,200	-48,605	-51,735	-46,397	-48,607	-50,756
-52,941	-54,142	-57,358	-51,938	-54,277	-56,314
-50,684	-51,894	-55,033	-49,743	-52,010	-54,021
274,675	276,693	266,660	270,715	270,831	270,947
313,689	315,666	305,360	308,922	309,564	309,752
326,119	327,727	317,649	320,936	321,877	321,894
339,937	341,092	331,241	334,282	335,543	335,326
351,078	351,946	342,325	345,059	346,602	346,274
354,926	355,693	346,151	348,782	350,422	350,054
350,575	351,460	341,832	344,573	346,105	345,787
238,349	238,250	231,102	234,064	234,823	233,905
4,117	1,682	-0,213	3,314	2,487	0,113
-5,211	-7,423	-9,521	-5,714	-6,782	-9,080
-11,497	-13,558	-15,792	-11,797	-13,027	-15,273
-16,876	-18,818	-21,176	-17,006	-18,377	-20,589

-20,342	-22,233	-24,685	-20,367	-21,838	-24,053
-27,878	-29,645	-32,295	-27,673	-29,355	-31,564
-35,372	-36,945	-39,750	-34,923	-36,795	-38,928
-36,599	-37,985	-40,722	-36,074	-37,931	-39,900
-37,523	-38,734	-41,399	-36,934	-38,769	-40,579
-43,104	-44,189	-46,980	-42,337	-44,318	-46,090
-45,865	-46,923	-49,798	-45,018	-47,082	-48,871
-46,188	-47,270	-50,172	-45,338	-47,420	-49,237
-48,445	-49,519	-52,497	-47,532	-49,686	-51,530
-50,681	-51,712	-54,745	-49,699	-51,914	-53,749
160,667	162,087	153,934	158,673	157,726	157,370
286,330	288,989	278,104	282,450	282,393	282,833
306,517	308,712	298,278	301,992	302,462	302,755
325,476	327,214	317,190	320,340	321,298	321,433
342,378	343,661	333,975	336,686	338,066	338,013
342,233	343,271	333,433	336,489	337,792	337,495
353,857	354,555	344,933	347,725	349,309	348,857
358,188	358,732	349,175	351,905	353,586	353,050
356,073	356,692	347,103	349,864	351,498	351,002
243,596	243,385	236,051	239,191	239,950	238,912
-11,701	-13,933	-16,278	-12,035	-13,323	-15,741
-26,912	-28,784	-31,463	-26,757	-28,439	-30,737
-38,699	-40,333	-43,294	-38,175	-40,174	-42,418
-38,758	-40,318	-43,237	-38,216	-40,195	-42,367
-37,869	-39,318	-42,138	-37,325	-39,242	-41,291
-41,475	-42,760	-45,612	-40,797	-42,784	-44,728
-43,812	-45,050	-47,959	-43,061	-45,111	-47,045
-46,996	-48,229	-51,249	-46,159	-48,312	-50,289
-48,246	-49,506	-52,588	-47,382	-49,584	-51,607
-47,722	-48,965	-52,017	-46,867	-49,047	-51,046
-50,420	-51,532	-54,604	-49,464	-51,694	-53,605
-47,719	-48,783	-51,729	-46,824	-48,951	-50,774
-49,108	-50,088	-53,032	-48,157	-50,304	-52,065
-51,324	-52,225	-55,203	-50,295	-52,492	-54,210
156,472	157,968	150,068	154,554	153,654	153,413
279,099	281,860	271,250	275,365	275,315	275,882
288,562	290,873	280,805	284,403	284,743	285,151
272,073	273,914	264,625	268,001	268,406	268,585
249,139	251,022	241,875	245,549	245,638	245,784
336,152	337,512	327,647	330,644	331,842	331,769
320,194	321,869	311,617	315,185	315,951	315,942
323,458	325,089	314,929	318,352	319,212	319,210
324,889	326,505	316,387	319,741	320,644	320,649
229,139	229,706	221,987	225,347	225,712	225,120
-9,320	-11,350	-13,488	-9,671	-10,821	-13,004
-16,130	-18,026	-20,330	-16,269	-17,603	-19,759
-16,734	-18,609	-20,922	-16,852	-18,200	-20,344
-24,006	-25,660	-28,102	-23,879	-25,401	-27,439
-33,737	-35,154	-37,805	-33,296	-35,067	-37,021
-31,904	-33,349	-35,952	-31,518	-33,238	-35,192

Data BMKG

Komposisi	Data Training	Data Testing	ELM (W/m ²)		Regresi Linier Berganda (W/m ²)	
			RMSE	MAE	RMSE	MAE
70%-30%	260	112	68,657	43,603	139,629	105,786
75%-25%	279	93	64,691	39,811	147,289	110,968
80%-20%	298	74	61,791	39,562	150,015	110,190
85%-15%	316	56	54,431	31,919	148,917	105,698
90%-10%	335	37	59,283	33,998	107,575	86,899
95%-5%	353	19	74,659	49,642	114,418	97,349

Hidden Neuron	75% - 25% (W/m ²)		85% - 15% (W/m ²)		95% - 5% (W/m ²)	
	RMSE	MAE	RMSE	MAE	RMSE	MAE
10	141.154	104.575	139,338	102,652	76,208	55,692
20	131.137	102.051	97,368	79,086	74,659	49,462
30	113.724	85.366	69,981	43,488	74,659	49,462
40	101.300	74.453	54,869	32,931	74,659	49,462
50	78.002	47.059	54,431	31,919	74,659	49,462
60	67,691	41,393	54,383	31,820	74,659	49,462
70	67,759	41,526	54,426	31,916	74,659	49,462
80	68,772	42,318	54,969	33,133	74,659	49,462
90	67,103	41,178	54,906	33,003	74,659	49,462
100	65,811	40,737	54,883	32,950	74,659	49,462

Data Meteobue Climatology NOAA

Komposisi	Data Training	Data Testing	ELM (W/m ²)		Regresi Linier Berganda (W/m ²)	
			RMSE	MAE	RMSE	MAE
70%-30%	30660	13140	68,657	43,603	139,629	105,786
75%-25%	32850	10950	64,691	39,811	147,289	110,968
80%-20%	35040	8760	61,791	39,562	150,015	110,190
85%-15%	37230	6570	54,431	31,919	148,917	105,698
90%-10%	39420	4380	59,283	33,998	107,575	86,899
95%-5%	41610	2190	74,659	49,642	114,418	97,349

Lampiran 4. Waktu Proses Running Program

Variasi Jumlah Data BMKG

BMKG (Malang)	
ELM	Waktu (s)
70%-30%	12,391
75%-25%	5,868
80%-20%	5,628
85%-15%	5,583
90%-10%	5,584
95%-5%	5,461

Variasi Data BMKG

BMKG (Malang)	
Regresi Berganda	Waktu (s)
70%-30%	1,773
75%-25%	1,639
80%-20%	1,613
85%-15%	1,615
90%-10%	1,643
95%-5%	1,705

Variasi Jumlah Hidden Neuron (75%-25%)

BMKG (Malang)	
ELM	Waktu (s)
10	2,735
20	3,506
30	4,271
40	4,881
50	5,750
60	6,481

Variasi Data NOAA

NOAA (Basel)	
ELM	Waktu (s)
70%-30%	150,617
75%-25%	165,368
80%-20%	152,443
85%-15%	172,542
90%-10%	164,992
95%-5%	147,296

Variasi Jumlah Hidden Neuron (85%-15%)

BMKG (Malang)	
ELM	Waktu (s)
10	2,760
20	3,416
30	4,092
40	5,115
50	5,478
60	6,237

Variasi Data NOAA

NOAA (Basel)	
Regresi Berganda	Waktu (s)
70%-30%	0,741
75%-25%	0,563
80%-20%	0,556
85%-15%	0,567
90%-10%	0,586
95%-5%	0,568

Variasi Jumlah Hidden Neuron (95%-5%)

BMKG (Malang)	
ELM	Waktu (s)
10	2,810
20	3,427
30	4,271
40	4,808
50	5,593
60	6,282

ELM dan Regresi Berganda Jangka Pendek

Data	Waktu (s)
BMKG	6,447
NOAA	34,018

View basic information about your computer

Windows edition

Windows 10 Pro

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System

Processor: Intel(R) Core(TM) i5-4200U CPU @ 1.60GHz 2.30 GHz
Installed memory (RAM): 4.00 GB (3.89 GB usable)
System type: 64-bit Operating System, x64-based processor
Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: Dimas-PC

Full computer name: Dimas-PC

Computer description:

Workgroup: WORKGROUP



Windows activation

Windows is activated [Read the Microsoft Software License Terms](#)

Product ID: 00331-10000-00001-AA962

