

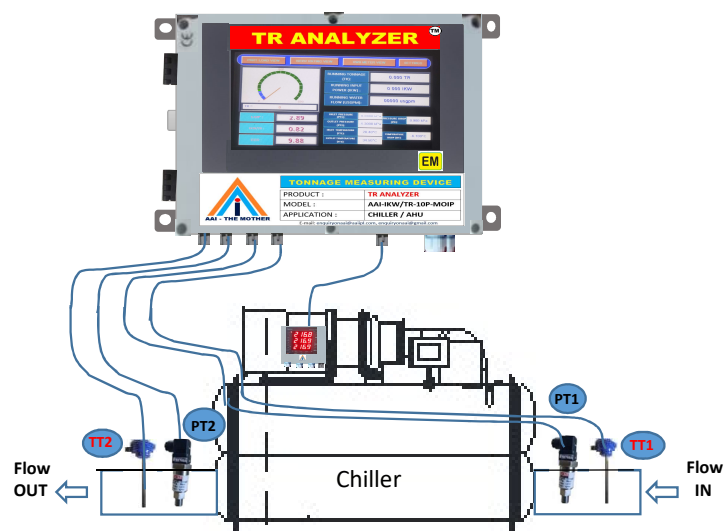


TR ANALYZERTM

TONNAGE MEASURING DEVICE

1. PRODUCT CATALOGUE

TR Analyzer - Tonnage Measuring Device for measuring actual running tonnage capacity of Chiller and AHU equipment based on DP type flow measuring principle and monitoring the performance of the equipment with part load NPLV & ISEER criteria.



- ➔ Actual Running Tonnage (TR) measuring with inline water flow sensing based on Inlet - Outlet Pressure and Temperature.
- ➔ Superior in water FLOW measuring without requirement of 5D/3D distance criteria.
- ➔ Single Model to fit all pipe sizes and tonnage capacity of Chiller / AHU from 0-4124 TR range.
- ➔ No Need to place extra flow switch or DP switch at chiller unit for water flow status contact.
- ➔ Real time Delta T and Delta P monitoring.
- ➔ IKW/TR and COP measuring as per AHRI / ASHRAE requirement. (for selected model)
- ➔ Part Load Performance monitoring as per AHRI / ASHRAE requirement. (for selected model)
- ➔ ISEER, Star Rating & NPLV performance monitoring. (for selected model)

Product Name :	TR Analyzer
Product Type :	Tonnage Measuring
Product Specific Application :	HVAC
Application Medium :	Water
TR Range :	0...4124 TR
Flow Range :	0...2498 m3/hr
Flow Measuring Accuracy :	± 0.5% of reading
TR Measuring Accuracy :	± 1.0% of FS
Pipe Size:	5mm...5000mm
Operating Pressure :	0..20 bar (as per selected Model)
Operating Temperature :	-20...55°C
Weight (overall) :	3.5 Kg
Measuring Data :	TR Option = Tonnage, Flow usgpm, Flow Status, Inlet/Outlet Pressure & Temperature, IKW / TR Option = TR, Flow usgpm, Flow Status, Inlet/Outlet Pressure & Temperature, IKW/TR, COP, EER, ISEER, NPLV, Part Load Performance.
Dimension (overall) :	IKW/TR Option = 336mm (L) x 258mm (H) x 113 (D) TR Option = 220mm (L) x 200mm (H) x 113 (D)
Power Supply :	100...240 V +/- 10 % AC
IP Protection :	TT/PT-IP66, EM-IP20

* Chiller / AHU Design Selection sheet to be shared while placing order.

MODEL:

TR :	TR = TR measuring only IKW/TR = TR Measuring with IKW/TR, COP, EER, ISEER, NPLV, Part Load Performance
Line Pressure:	6P = upto 6 bar 10P = upto 10 bar 16P = upto 16 bar 20P = upto 20 bar
Monitoring Output :	MORS = Modbus over RS485 (2-wire) output (for TR Option) MOIP = Modbus Ethernet/IP output (for IKW/TR Option) Note: Below default common output for Tonnage reading (only) is available : 4-20mA output = TR and IKW/TR option 0-10VDC output = TR option only

AAI	TR	P	MO
XXX	XXXX	XXX	XXXX



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Sr. No.	Model No.	Modbus Output	Line Pressure	Output/s
1)	AAI-TR-6P-MORS	RS485 (2-wire)	6 bar	TR, Flow usgpm, Flow Status, Inlet/Outlet Pressure & Temperature, (BTU optional)
2)	AAI-TR-10P-MORS	RS485 (2-wire)	10 bar	
3)	AAI-TR-16P-MORS	RS485 (2-wire)	16 bar	
4)	AAI-TR-20P-MORS	RS485 (2-wire)	20 bar	
5)	AAI-IKW/TR-6P-MOIP	Ethernet / IP	6 bar	TR, Flow usgpm, Flow Status, Inlet/Outlet Pressure & Temperature, IKW/TR, COP, EER, ISEER, NPLV, Part Load Performance, (BTU optional)
6)	AAI-IKW/TR-10P-MOIP	Ethernet / IP	10 bar	
7)	AAI-IKW/TR-16P-MOIP	Ethernet / IP	16 bar	
8)	AAI-IKW/TR-20P-MOIP	Ethernet / IP	20 bar	

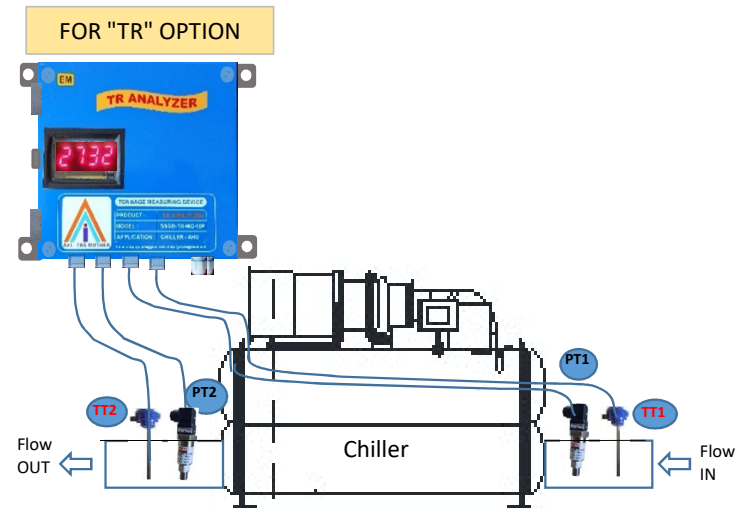
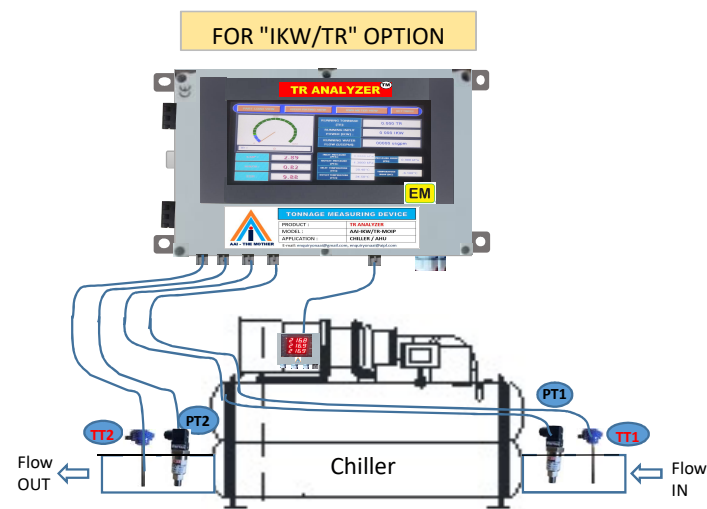
ACCESSORIES :

- 1) Ball Valve G $\frac{1}{4}$ " A for each PT1 and PT2 = Total quantity 2 Nos
- 2) Coupling of 3/4" for TT1 and TT2 = Total 2 Nos
- 3) Mounting plate / stand on pipe for EM unit Near PT2

* Accessories are not part of this product. End buyer has to arrange locally.

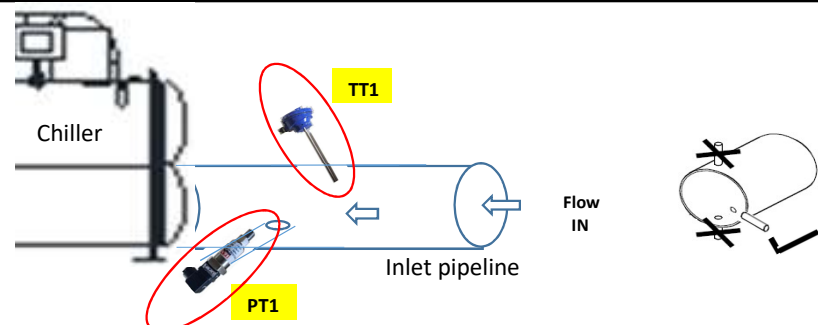
INSTALLATION STEP:

Installation of TR ANALYZER :



STEP-1 : Part-1 : INLET- PT1 & TT1 Installation :

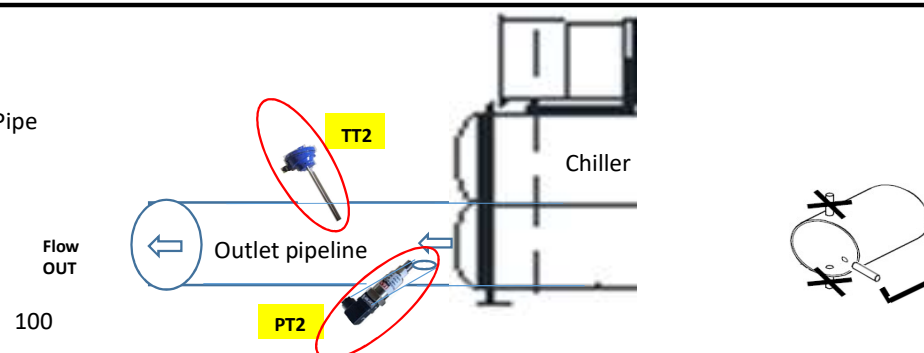
Location = **Inlet Pipe** of the Chiller / AHU
Connection = G $\frac{1}{4}$ " A for PT and 2/3" well for TT into the Pipe
Direction = 45° angle opposite to the water flow
Position = 35% bottom side of the pipe



Description : Ensure PT1 pressure transmitter is installed at **INLET** line only. Ensure Ball valve to be installed prior to the PT for isolation and maintenance purpose.

STEP-2 : Part-2 : OUTLET- PT2 & TT2 Installation :

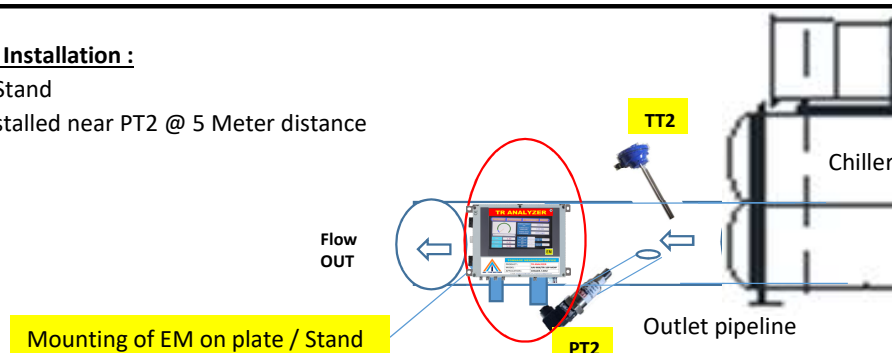
Location = **Outlet Pipe** of the Chiller / AHU
Connection = G $\frac{1}{4}$ " A for PT and 2/3" well for TT into the Pipe
Direction = 45° angle opposite to the water flow
Position = 35% bottom side of the pipe



Description : Ensure PT2 pressure transmitter is installed at **OUTLET** line only. Ensure Ball valve to be installed prior to the PT for isolation and maintenance purpose.

STEP-3 : Part-3 : Electronic Module - EM Installation :

Connection = Mounting plate / Stand
Mounting plate / stand to be installed near PT2 @ 5 Meter distance



Description : Ensure EM module is installed near to PT2 at **OUTLET** line only within 5 Meter distance from PT/TT. Ensure Mounting Plate / Stand being installed.

(Note : Electronic Module for TR option will be of different size and it will not have Touch Panel Display)

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STEP-4 : Part-4 : Kwh Meter & CT Installation (for IKW/TR Option only) :

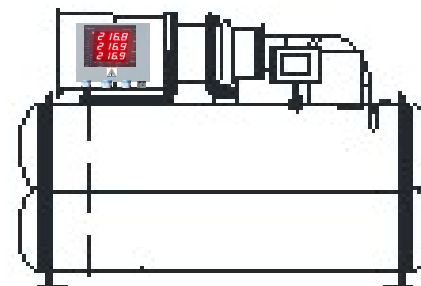
Location = Inside Chiller Panel

Installation of Kwh Meter = To be installed inside Chiller Panel.

Installation of CT = To be installed in each R phase, Y phase and B phase respectively.

Termination of Cable = Each Cable of Current & Voltage to be installed as per guideline.

Very Important = All Kwh Meter, CT and Cable Termination To be installed by well trained Electrical Technical person only



TERMINAL WIRING :

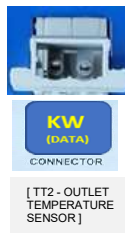
FOR "IKW/TR" OPTION :

(FUTURE)	-RS/13	T1
	+RS/14	T2
0-10V DC TR Output	+AO3/3	T3
	-GND/12	T4
4-20mA TR Output	+AO5/5	T5
	-GND/12	T6
Flow PFC Status Output	+DO1/16	T7
	-DO1/19	T8
100~230V AC	L	T9
	N	T10



Mobus TCP/IP

SENSOR WIRING :



FOR "TR" OPTION:

MODBUS / RS485	-RS/13	T1
	+RS/14	T2
0-10V DC TR Output	+AO3/3	T3
	-GND/12	T4
4-20mA TR Output	+AO5/5	T5
	-GND/12	T6
Flow PFC Status Output	+DO1/16	T7
	-DO1/19	T8
100~230V AC	L	T9
	N	T10

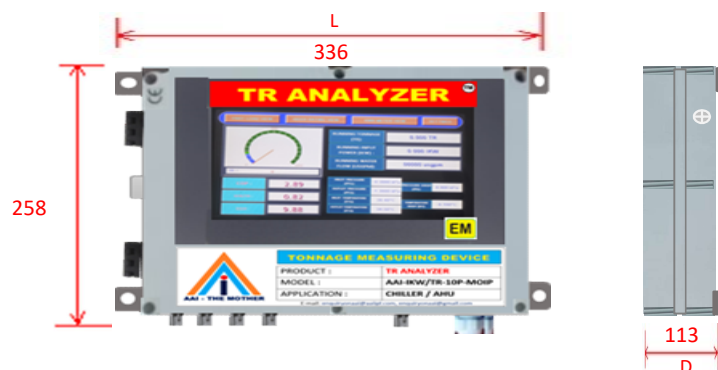
SENSOR WIRING :



DIMENSIONS (in MM) :

EM Display Unit :

FOR "IKW/TR" OPTION



Pressure Transmitter Unit (PT1 & PT2) :

Temperature Transmitter Unit (TT1 & TT2) :



FOR "TR" OPTION

