TECHNICAL GUIDANCE

DIR-530

DIGITAL TANK DATA INDICATOR

GENERAL

Developed from the well accepted DIR-500, the RoHS compatible **DIR-530** is a panel mount type compact digital tank data indicator. Connecting to any TOKYO KEISO's 2-wire digital tank data transmitters as well as tank top type servo operated tank gauges, **DIR-530** serves for the following applications.

1. Dedicated receiving instrument for full time monitoring of one tank
2. Inexpensive receiving instrument for moderate size tank farm with a few tanks
3. Interfacing with supervisory system

At low cost, **DIR-530** constitutes the simple, reliable, accurate digital monitoring and control system of the tank farm in combination with TOKYO KEISO's various tank monitoring 2-wire transmitters.

FEATURES

❏ DIR-530 indicator receives signals from any TOKYO KEISO's 2-wire digital tank data transmitters as well as tank top type servo operated tank gauges.

❏ DIR-530 indicator provides two 4 -20mADC output signals and two alarm relay output signals when it is used as one tank monitoring.

❏ DIR-530 indicator is able to receive 4 transmitters which have single directional data transmission capability with 2-wire system common to power and signal.

❏ DIR-530 indicator is able to receive 16 transmitters which have bi-directional data transmission capability, i.e. both from indicator to transmitter and vice versa, with 2 independent wirings of power and signal.

❏ DIR-530 indicator is able to be connected to supervisory systems such as personal computer, DCS and sequencer via pre-installed serial and parallel communication ports, RS-232C or RS-485 with Modbus-RTU.

❏ DIR-530 indicator is interchangeable with the current 1 tank receiver i.e. TOKYO KEISO's DIR-200 receiver and DIR-400 receiver, except alarm reset input of DIR-200. It makes your factory renovation much easier.

❏ DIR-530 indicator indicates the operating status of itself as well as level and temperature at the same time.

❏ DIR-530 indicator, its all operation parameters can be set from menu selection through three key switches.

❏ DIR-530 indicator has the compact DIN 96 x 96 mm size to save panel space.

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STANDARD SPECIFICATION and OUTLINE OF FUNCTION

CONNECTABLE TRANSMITTERS

| Item	Specification	Remark
Connectable transmitters	Tokyo Keiso's single direction type : DM4-1 Tokyo Keiso's bi-direction type : FW-9000N/DM4-2-1	Including transmission format compatible transmitter
Number of connectable transmitters	Standard : 1 Single direction type : max. 4 Bi-direction type : max.16	Can not be connected at the same time to transmitters with different transmission format.

OUTPUT SIGNALS

Item	Specification	Remark
4-20mA output	1) 2 contacts 2) For output of level and temperature 3) Output range 3.6 to 21.6mA 4) Source standard. Sink is also available. 5) External power supply DC 24V at the time of sink. 6) Load resistance Max. 500Ω. 7) Accuracy : better than ± 0.1% (F.S.) 8) Temperature coefficient : less than ± 0.01%(F.S.) / °C	Applicable only when one transmitter is connected. Zero and span can be changed or set freely.

Relay output for alarm	1) 2 contacts
	2) For alarm of level, temperature and transmitter abnormal conditions
	3) Contact type : NO, NC (C contact output)
	4) Contact capacity : AC125V 0.3A
	      : DC 30V 0.3A
	      Both are load resistance.
		Applicable only when one transmitter is connected. Any 2 point alarms are selected freely from 4 level alarms, 2 temperature alarms and transmitter abnormal condition by the setting.

Serial output	1) Interface : RS-232C signal level or RS-485 2) Protocol Modbus (RTU mode) 3) Baud rate : 2400/4800/9600/19200bps	To be connected to terminals. Changes of I/O assignment are not allowed.
Parallel output	1) Type 1 or Type 2 2) I/O insulated type by photo coupler	Type 1 : Request is provided, Ready is provided Type 2 : Request is not provided, Ready is provided

FUNCTION AND RATING

Item	Specification	Remark

Indication	Tank No. : 1 digit
	Level : 6 digits [mm] : Indicated in 0.1 mm unit for FW-9000
	Temperature : 4 digits [°C] in 0.1 unit
	Status : 2 digits
	  Indicates alarm/error/displacer status of the tank that is currently indicated in symbols.
	Others : 24 digits LED
	  Indicates operation mode/displacer status/alarm status of the tank that is currently indicated in LED individually.
		When multiple tanks are connected, automatic scanning is conducted and tank data on indication is updated with every data entry.

Key operation	UP, RIGHT, ENTER total 3 keys, membrane type, 8 mm diameter	
Alarm setting and alarm determination	Following alarm points can be set for each tank 4 points of level alarms (HH/H/L/LL) and 2 points of temperature alarms (TH/TL)	Alarms are determined by comparing input signals and setting values when signals enter. However, alarm indication is shown only for the selected current tank. Alarm operation is of non-lock type.
Displacer control	Remote operation of displacer such as measuring, lifting, stoppage.	Applicable only when FW-9000N is connected. Status of displacer is shown on status and LED.
Supply voltage	AC85 ~ 250V, 50/60Hz	
Rated power	20VA at steady state	
Ambient environment on operation	Temperature : 10 to 40°C Humidity : 20 to 80%	Avoid condensation.
Installation	Panel mount Panel cut 90.5 mm (W) × 90.5 mm (H) with tolerance +1,–0	Metal fitting for panel mounting is attached.
Outline dimension	96(W) × 96(H) × 265(D)	Except rear terminal
Painting color	Panel : Black Body : SPCC chrome plating	
Weight	Approx. 2kg	
Terminal construction	Plug-in screw clamping type terminal	
Conformable wire	Power supply, grounding : 0.5~2.5mm² Other signals : 0.5~1.5mm²	
Applicable standard	RoHS	
Accessory	Fuse : 1 set (1.0A × 2, 0.5A × 2) Metal fitting for panel installation : 1 set	

OUTLINE DIMENSIONS

FRONT VIEW

SIDE VIEW

Panel

Metal fitting for panel installation
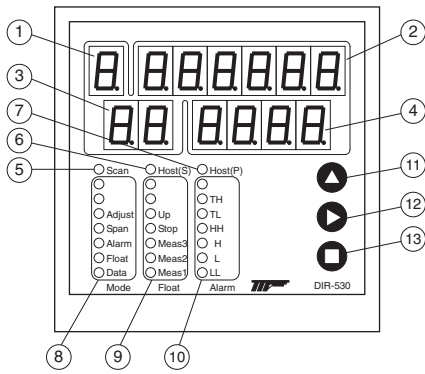
REAR VIEW

PANEL CUT DIMENSION
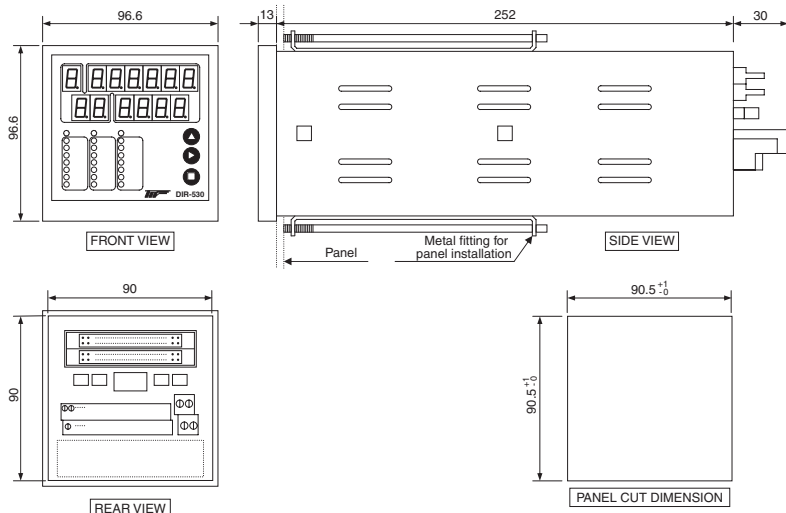
This drawing shows DIR-532 witch has parallel output connectors behind the body.

NAMES OF PARTS

• FRONT PANEL

No.	Description	No.	Description
1	TANK NO. INDICATION LED	8	DATA SETTING MODE LED
2	LEVEL DATA INDICATION LED	9	DISPLACER OPERATION MODE LED
3	STATUS DATA INDICATION LED	10	ALARM MODE LED
4	TEMP. DATA INDICATION LED	11	UP KEY
5	TRANSMITTER SCAN MONITOR	12	RIGHT KEY
6	SERIAL HOST MONITOR	13	ENTER KEY
7	PARALLEL HOST MONITOR		

• REAR PANEL (DIR-532)
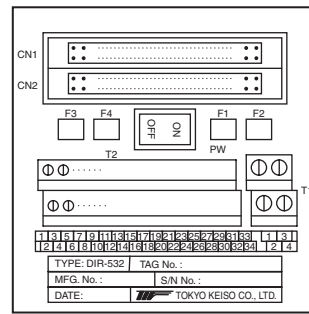
| No.	Description
PW	Power switch
F1, 2	Fuse for power supply line
F3, 4	Fuse for signal line of transmitter
T1	Input terminal for power supply line
T2	I/O terminal for signal line
CN1, CN2	Connector for parallel output

APPLICATION EXAMPLES

(1) For 1 tank monitoring
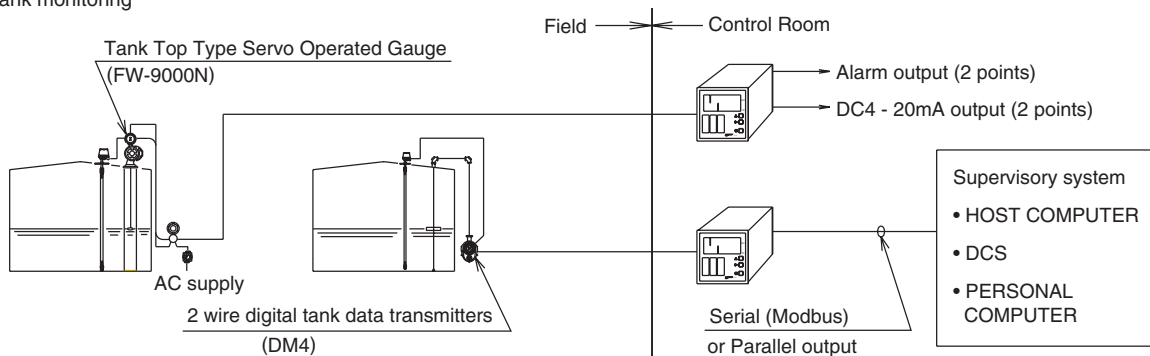
(2) Single directional transmitters For 4 tanks monitoring
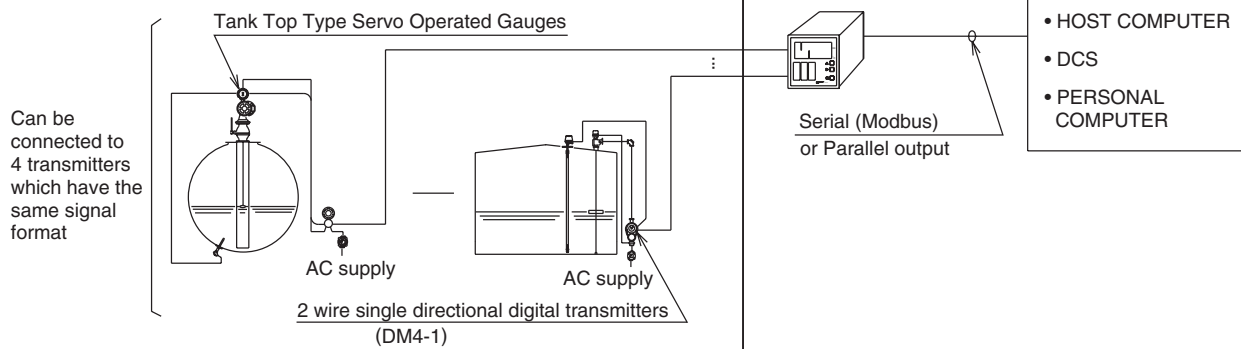
(3) Bi-directional transmitters For 16 tanks monitoring
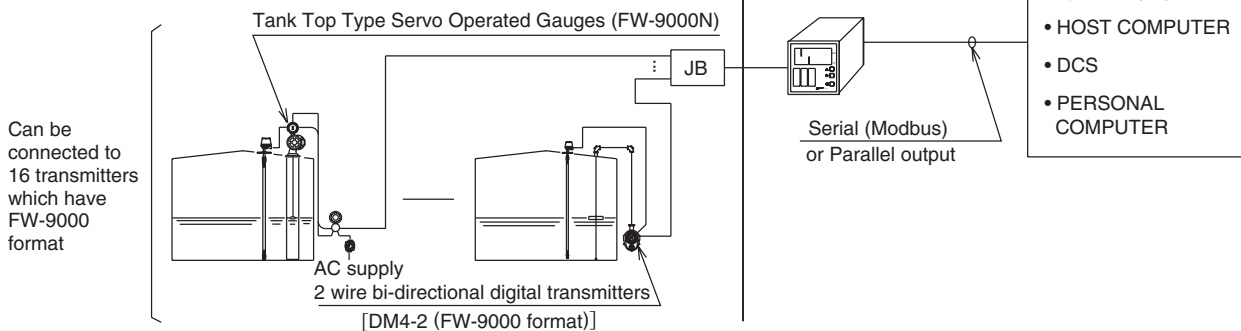
ORDERING INFORMATION

• MODEL

☐ DIR-531   Parallel output is not provided
☐ DIR-532   Parallel output is provided

• SPECIFICATION

1.Connecting transmitter

1) Connecting transmitter	Bi-directional type		Single directional type		☐Others ( )
	☐FW-9000N ☐DM4-2	☐DM4-1	☐FW-9000N		
2) Transmitter format	☐FW-9000	☐DM	☐DB-M ☐DB-ML ☐DM		☐_____
3) Numbers of connecting transmitters	_____Numbers (Max.16)		_____Numbers (Max. 4)		_____Numbers

2.Output

Item		Specifications	Default values at delivery if not specified
4 to 20mA output *1	Output 1	☐ Level ☐ Temperature ☐ None	Level
	Output 2	☐ Level ☐ Temperature ☐ None	Temperature
	Level setting value	Zero _____ [mm] Span _____ [mm]	0 [mm] 20,000 [mm]
	Temperature setting value	Zero _____ [°C] Span _____ [°C]	0.0 [°C] 100.0 [°C]
Alarm set values when being used as 1 tank monitoring		HH : _____ [mm] H : _____ [mm] L : _____ [mm] LL : _____ [mm] T H : _____ [°C] T L : _____ [°C]	999,999 [mm] 20,000 [mm] 0 [mm] −99,999 [mm] 999,9 [°C] −199,9 [°C]
Relay output *1, *2	Relay 1	☐LL ☐L ☐H ☐HH ☐TL ☐TH ☐ER ☐None	H
	Relay 2	☐LL ☐L ☐H ☐HH ☐TL ☐TH ☐ER ☐None	L
Serial output		☐ Without connection ☐ With connection Interface ☐ RS232C ☐ RS485 Protocol Modbus RTU (Slave) Address ____ Baud rate ☐ 2400 ☐ 4800 ☐ 9600 ☐ 19200 Bit pattern ☐ N81 ☐ E81 ☐ O81	RS232C 01 9600 N81
Parallel output		☐ Requested ☐ Not requested Type ☐ Type 1 (Request is provided, Ready is provided) ☐ Type 2 (Request is not provided, Ready is provided) Connector ☐ CN1 only (Level output only) ☐ CN1+CN2(Level and Temperature output)	Type 1 Only CN1

∗1 : Applicable only when one transmitter is connected.
∗2 : LL.,L,H,HH are used for level alarms. TL, TH for temperature alarms. ER for status alarms.

OPTION

Part name	Part No.	Remark
Metal fitting for panel installation	DIR530-MF	1 unit
Fuses for signal	DIR530-FS05	0.5A 2 pieces
Fuses for power source	DIR530-FS20	2.0A 2 pieces
Serial communication cable	DIR530-SCB-☐m	D-Sub 9pin connector
Parallel communication cable-1	DIR530-PCB1-☐m	with a connector at one end
Parallel communication cable-2	DIR530-PCB2-☐m	with two connectors at both ends
Terminal block for parallel communication	DIR530-PTB	For cable with connectors at both ends

* Specification is subject to change without notice.

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