

General Specifications

Model TDLS8200
Probe type
Tunable Diode Laser Spectrometer

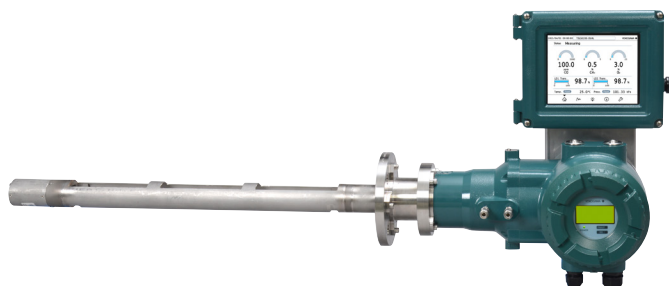
GS 11Y01D03-01EN

■ Overview

Yokogawa's TDLS™ 8200 is a dual laser gas analyzer that measures the concentration of O₂, CO, and CH₄ which are important for combustion control and safety related measurements with the ability to measure various other NIR absorbing gases.

The TDLS8200 is installed in-situ, directly into the process eliminating the need for sample extraction and conditioning providing a near real time measurement. The single flange design reduces installation costs and expands installation flexibility where traditional cross-duct analyzers were not feasible due to obstructions or accessibility. Based on solid-state technology means virtually no measurement drift and reduced calibration frequency. The analyzer auto-gain feature and reference cell ensures measurements are unaffected by dynamic process conditions, upsets, or varying background composition to maintain real time measurements.

The modular design of the TDLS8200 allows for full field serviceability with the ability to replace components without having to return the analyzer to the manufacturer. A storage period of up to 50 days of data, spectra, and history files (validation and configuration changes) allow for advanced diagnostics and provides invaluable information into analyzer performance and process details.



TDLS8200 with YH8000 HMI Unit

■ Features

- Dual laser measurement technology allows for O₂, CO, and CH₄ to be measured in-situ with a single analyzer
- TruePeak™ combined with smart laser technology
 - Measurement integrates the area of the absorbance and gets a true, interference-free analysis under changing pressure, temperature, and background.
 - Laser Detector Module is replaceable on site without any calibration or adjustment.
 - Internal reference cell in the Laser Detector Module ensures peak locking during trace measurements.
 - Laser Detector Modules are isolated from aggressive and corrosive processes.
 - On board diagnostics and low TCO^(*1) (no moving parts, high MTTF^(*2) for components)
- IEC61508 SIL certified, SIL 2 capability for one TDLS8200 use, SIL 3 capability for duplicate TDLS8200s use
- Intuitive touchscreen HMI YH8000
 - YH8000 offers intuitive touch screen operation and simple menu structure in multiple languages allowing for control of up to four analyzers simultaneously (including TDLS8000 and TDLS8100)

*1: Total Cost of Ownership
*2: Mean Time To Failure

- HART and Modbus TCP communications standard
- 8-stage auto-gain adapts to difficult applications
 - Auto-gain enables wide signal ranges against dynamic variation of transmission.
- Full field serviceability with 50 days of data and spectra storage
- FM (US, Canada), IECEx, ATEX/UKEX, hazardous area, Korea (Applying), NEPSI (Applying), Japan (Applying) approvals based on Explosionproof/flame proof.
- In-situ analysis and near real time measurements (2-5 seconds, 1 second optional)
- Process pressures up to 500 kPa abs., process temperatures up to 850°C, and process gas flow velocity 1 m/s or more.

Note: Maximum process temperatures, pressures, and flow velocity will vary by application.

Typical gases measured include:

- Oxygen, carbon monoxide, and methane in process applications.
Process temperatures can be as high as 850°C, and process pressures can be as high as 500kPa abs.

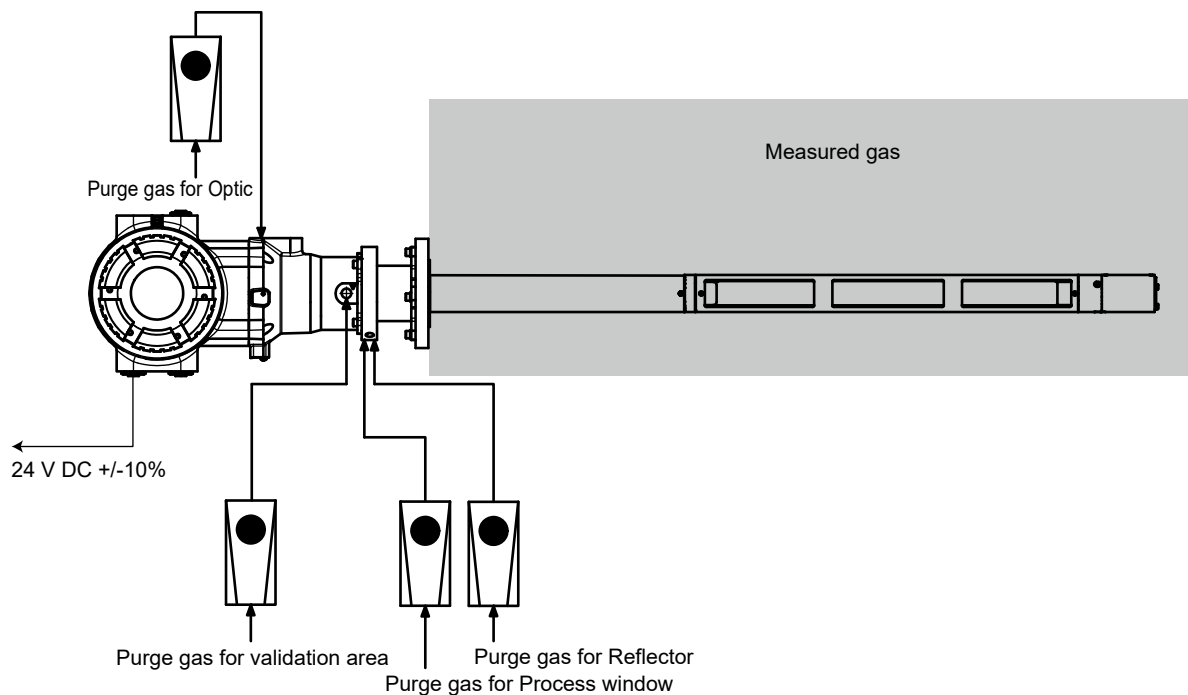
TDLS, TruePeak are trademarks or registered trademarks of Yokogawa Electric Corporation.

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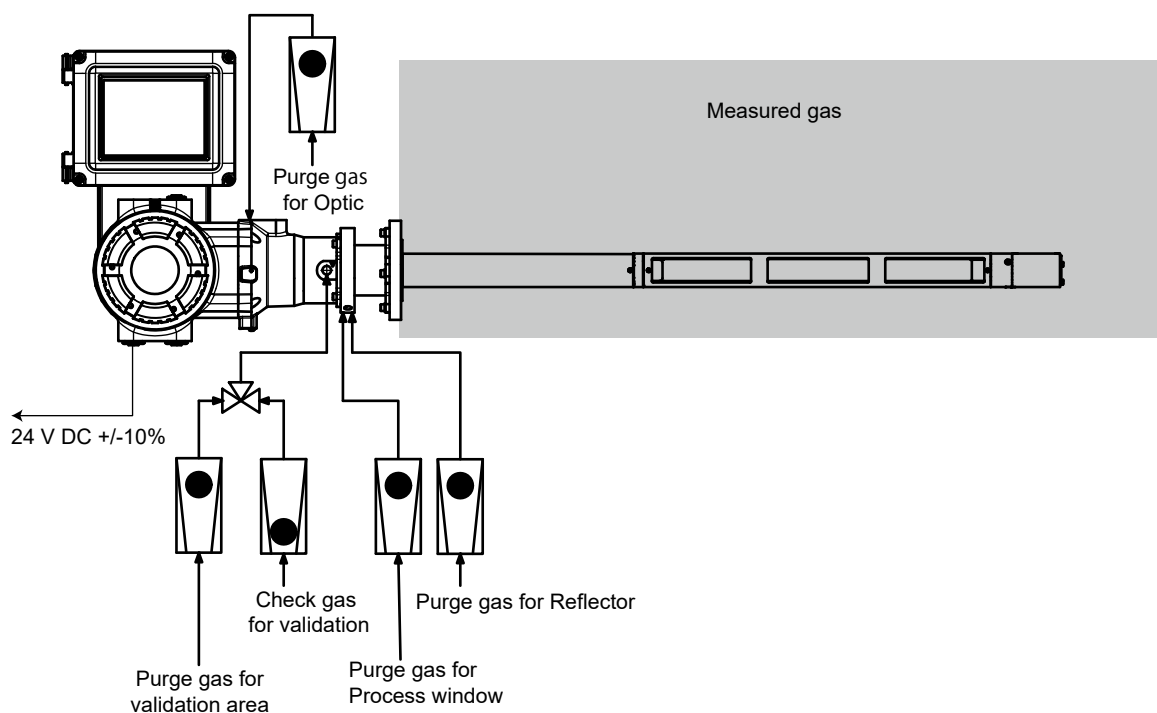
Please select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.

■ System configuration

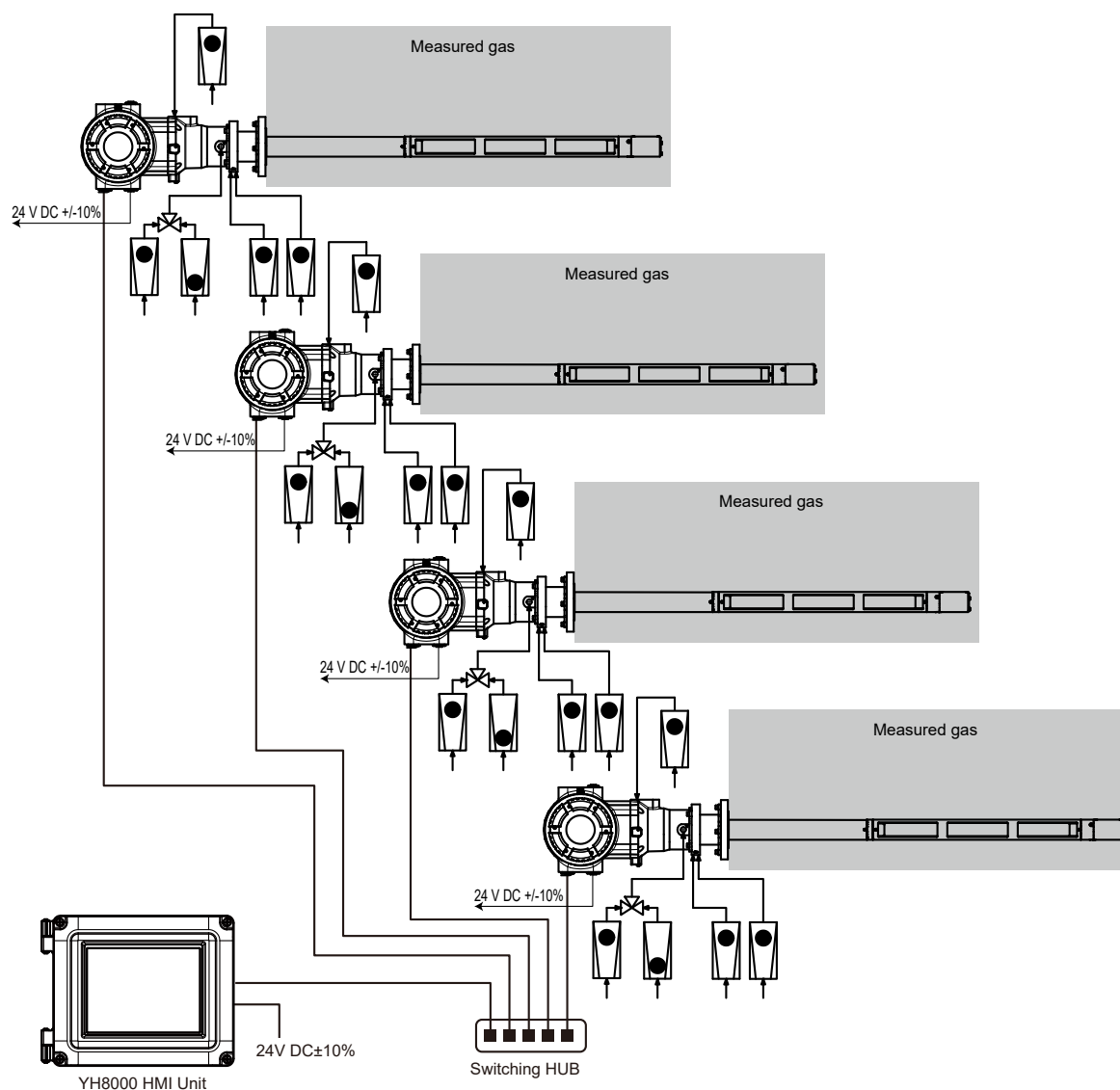
Standard System Configuration



System Configuration with YH8000 HMI Unit and Validation gas line



Multi Analyzer Configuration with Remote HMI



Note: If power supply is 100 to 240 V AC, purchase the Universal Power Supply, separately.
 If four multi configuration of TDLS8100 or TDLS8200 with remote HMI is made, five universal power supplies including YH8000 are needed.

■ STANDARD SPECIFICATIONS

● TDLS8200 Probe type Tunable Diode Laser Spectrometer

Measurement object:

O₂, CO, CO or CH₄ concentration in combustion exhaust gas and process gas
If other gas measurements are required, consult with Yokogawa

Measurement system:

Tunable diode laser spectroscopy
Light source; Near-infrared tunable diode laser

Measured components and ranges:

Measured component	Min. range	Max. range
O ₂	0-1%	0-25% (*2)
CO (*1)	0-200 ppm	0-10,000 ppm
CH ₄ (*1)	0-5%	

*1: Please consult Yokogawa if CO and CH₄ component coexists.

*2: In the case of explosionproof type, oxygen concentration shall not exceed that found in normal air, typically 21%.

Safety and EMC conformity standards:

Safety conformity standards:

CE, UKCA EN61010-1, EN61010-2-030

UL UL61010-1, UL 61010-2-030

CSA CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030

GB GB30439 Part 1

Installation altitude: 2000 m or less

Installation category:

I (Anticipated transient overvoltage 330V)

Measuring category: O (Other)

Pollution degree: 2, Indoor/Outdoor use

Note: Installation category, called overvoltage category, specifies impulse withstand voltage. Pollution degree indicates the degree of existence of solid, liquid, gas or other inclusions which may reduce dielectric strength.

EMC conformity standards:

CE, UKCA EN55011 Class A Group 1

EN61326-1 Class A Table 2 (For use in industrial location), EN61326-2-3

RCM EN55011 Class A Group 1

KC KN11 Class A Group 1, KN61000-6-2 (Korea Electromagnetic Conformity)

Laser classification:

CSA E60825-1:15,
GB7247.1-2012, FDA 21 CFR part 1040.10,
Class 1 laser product

SIL Certification:

IEC 61508:Functional safety of Electrical/electronic/programmable electronic related systems; SIL 2 capability for single analyzer use, SIL 3 capability for dual analyzer use.

However, analog output (AO-4, AO-5), contact output (2 points), contact input (2 points), contact output for valve drive (2 points), digital communication (HART, Modbus/TCP) are outside the scope of the certification.

RoHS conformity standards: EN IEC 63000:2018

Information of the WEEE Directive

This product is purposely designed to be used in a large scale fixed installations only and, therefore, is out of scope of the WEEE Directive. The WEEE Directive does not apply. The WEEE Directive is only valid in the EU and UK.

Display: 128 x 64 dots LCD; On Sensor Control Unit Status LEDs; (Green: Power, Orange: DO, Red: Fault)

Display items:

Gas concentration, Transmission, Process gas temperature (AI), Process gas pressure (AI), System status, Alarm information, System information (Product serial no., Laser detector module serial no., Output signal, IP address, HART address, Optical path length, Analyzer internal temperature)

Analog output:

5 points, 4 to 20 mA DC (Isolated from the power supply and ground, Max. load resistance 550 Ω)

Output types; Gas concentration, Transmission, Process gas temperature, Process gas pressure

Output range; 3.0 to 21.6 mA DC

Digital communications:

HART; On analog output signal 1 (AO-1)

Load resistance; 250 to 550 Ω (Include cable resistance)

Ethernet; RJ-45 connector

Protocol; Modbus/TCP

Communication speed; 100 Mbps

Digital output: 2 points, contact rating 24V DC, 1A DO;

Function: Activate during Warning / Calibration / Validation / Warm up / Maintenance conditions

Contact Specification: Relay contact output (Isolated from the power supply and ground), C-contact (NC/NO/COM)

Fault;

Function: Activate during Fault condition or when the system power is off

Contact Specification: Relay contact output (Isolated from the power supply and ground), A-contact (NC/COM)

Valve control output: 2 points

Function; Activate calibration, validation or blow-back solenoid valves for zero, span or validation gas.

Output signal; 24V DC, 500 mA Max. per terminal

Alarm:

Warning; Gas concentration low, Gas concentration high, Transmission low, Process pressure low, Process pressure high, Process temperature low, Process temperature high, Validation required, Validation failure, Zero calibration error, Span calibration error, External alarm, Detector signal high, Absorption too high

Fault; Laser module temperature low, Laser module temperature high, Laser temperature low, Laser temperature high, Peak center out of range, Reference peak height low, Transmission lost, Reference peak height high, Laser unit failure, Laser module error, File access error, E2PROM access error

Digital input: 2 points
 Function; External Alarm/Calibration start/
 Validation start/Blow-back start/Stream
 switch (Valve control)
 Contact specification; Zero voltage contact input
 (Isolated from the power supply and
 ground)
 Input signal; Open signal: 100 kΩ or more, Close
 signal: 200 Ω or less

Analog input: 2 points
 Signal type; 4 to 20 mA DC (Isolated from
 the power supply and Ground), with
 selectable powered/unpowered function
 Input signal range; 2.4 to 21.6 mA DC
 Input types; Process gas temperature, Process
 gas pressure
 Transmitter power supply; 15 V DC or higher (at 20 mA DC)
 26 V DC or less (at 0 mA DC)

Self-diagnostics:
 Laser detector Unit temperature, Laser
 temperature, Detector signal level,
 Memory read/write function, Peak locking
 condition

Calibration:
 Calibration method; Zero/Span calibration
 Calibration mode; Manual

Validation:
 Validation method; Up to 2 points
 Validation mode; Manual, Auto (Time initiated,
 Remote initiate (DI/Modbus)), Semi-Auto
 (YH8000)

Power supply: 24V DC +/-10%

Power consumption:
 Max. 25W; TDLS8200 only
 Max. 60W; with YH8000 and 2 solenoid valves

Protection degree: IP66, Type 4X

Material: Case; Aluminum alloy

Wetted materials: Fused silica, 316 SS(eq.),
 BK-7 glass, Teflon encapsulated FKM,
 ASE wool, Alloy 800, 800H/HT (or
 equivalent, only for High temp.)

Paint color: Mint green (RAL 190 30 15 or equivalent)

Weight (approx.):
 Probe part (Standard); 0.7 m 2.7 kg, 1 m 4.3 kg,
 1.5 m 7.0 kg, 2 m 9.8 kg
 Probe part (High temp.); 1 m 20.0 kg, 1.5 m 25.0 kg
 Analyzer part; explosion proof; Approx. 16.5 kg
 general purpose; 15.6 kg (Not include flange)

Process gas condition:
 Process gas temperature; Max. 850°C, Application
 dependent
 Process gas pressure; Max. 500 kPa abs., Min. 90
 kPa abs., Application dependent
 Process gas velocity; over 1m/s (recommendation
 over 5 m/s)
 Dust in process gas; When the process dust load
 is high, please consult with Yokogawa.

Note: When using TDLS8200 as CE/UKCA marking
 compliance product, it has following limitation.
 General purpose model (-G1, -G2): The upper
 limit of the measurement gas pressure is 50kPa
 in gauge pressure. The unstable gas defined by
 following cannot be measured. An unstable gas
 in this context is a gas liable to transform itself
 spontaneously, producing a sudden pressure
 increase. Such transformation as an example
 can result from a relatively small variation of an
 operating parameter (e.g. pressure, temperature,
 presence of catalyzing material) in a confined
 volume. This includes gases that are classified
 as chemically unstable gases according to CLP
 Regulation (EC) No 1272/2008 as amended.
 Typical examples of unstable gases: acetylene
 (UN 1001), methyl acetylene (UN 1060),
 vinylfluoride (UN 1860), ozone and dinitrogen
 oxide (UN 1067). For further examples, see Table
 35.1 of the UN Manual of Tests and Criteria.

Warm-up time: 5 min.

Installation condition:

Ambient operating temperature; -20 to 55°C
 Storage temperature; -30 to 70°C
 Humidity; 0 to 95%RH at 40°C (Non-condensing)
 Mounting flange type; ASME B16.5, DIN, JIS
 Gas connections; 1/4NPT or Rc1/4
 Cable entries; 1/2NPT or M20x1.5mm, one hole.
 3/4NPT or M25x1.5mm, three holes

Purge gas connections;

1/4NPT or Rc1/4

If other gas connections are required,
 please consult with Yokogawa.

Purge gas; Theoretically, instrument air could be used
 as a purge gas for all the below applications
 except for oxygen measurement.
 Choosing between using nitrogen or
 instrument air or purge gas will ultimately
 depend upon further application details and
 the desired precision of the measurement. All
 gases should be clean and dry.

Recommended purge gases: N₂ (99.99% or
 greater, application dependent)

Purge gas flow rates;

Optic: 2 to 20L/min (Application dependent)
 100 to 200mL/min (explosionproof)
 * Not more than 10 kPa at the inlet for
 explosionproof.

Process window/Reflector:
 0.5 to 100 L/min (Application
 dependent)

Hazardous area classifications:

Division1, Zone1 Explosionproof

TDLS8200-D1 (FM Approval for US)

Division system:

Type pf protection:

Explosion proof; Class I, Division 1, Groups A,
 B, C, D, T6

Dust-Ignitionproof; Class II/III, Division 1,
 Groups E, F, G T6

Enclosure rating: Type4X

Applicable standards:

FM Class 3600: 2018,
FM Class 3615: 2018,
FM Class 3616: 2011,
FM Class 3810: 2018,
NEMA 250: 2014,
ANSI/UL 50E:2015
ANSI/UL 61010-1:2012
ANSI/UL 61010-2-30:2012
ANSI/ISA-12.27.01: 2011

Zone system:

Type of protection:

Class I, Zone 1, AEx db [op is Ga] IIC T6 Gb
Zone21, AEx tb [op is Da] IIIC T85°C Db

Enclosure rating: IP66

Applicable standards:

ANSI/UL 60079-0:2013
ANSI/UL 60079-1: 2015,
ANSI/UL 60079-28:2017,
ANSI/UL 60079-31: 2015,
ANSI/IEC 60529:2004
ANSI/UL 61010-1:2012
ANSI/UL 61010-2-30:2012
ANSI/ISA-12.27.01: 2011

TDLS8200-C1 (FM Approval for Canada)

Type of protection:

Ex db [op is Ga] IIC T6 Gb
Ex tb [op is Da] IIIC T85°C Db

Enclosure rating: IP66, Type4X

Applicable standards:

CSA C22.2 No.94.2-15:2015,
CAN/CSA C22.2 No.60079-0: 2015,
CAN/CSA C22.2 No.60079-1: 2016,
CAN/CSA C22.2 No.60079-28: 2016,
CAN/CSA C22.2 No.60079-31: 2015,
CAN/CSA C22.2 No.60529: 2016,
CAN/CSA-C22.2 No. 61010-1-12:2012,
CAN/CSA-C22.2 No. 61010-2-030-12:2016,
ANSI/ISA-12.27.01: 2011

TDLS8200-E1 (IECEx)

Type of protection:

Ex db [op is Ga] IIC T6 Gb
Ex tb [op is Da] IIIC T85°C Db

Enclosure rating:

IP66 (In Accordance with IEC 60529)

Applicable standards: IEC 60079-0:2017,
IEC 60079-1:2014,
IEC 60079-28:2015,
IEC 60079-31:2013

TDLS8200-S1 (ATEX/UKEX)

Type of protection:

II 2(1) G Ex db [op is Ga] IIC T6 Gb
II 2(1) D Ex tb [op is Da] IIIC T85°C Db

Enclosure rating:

IP66 (In Accordance with EN 60529)

Applicable standards:

EN IEC 60079-0:2018,
EN 60079-1:2014,
EN 60079-28:2015,
EN 60079-31:2014,

PERFORMANCE

Repeatability / Linearity:

Measured gas		Repeatability	Linearity
O ₂		+/- 1% reading or +/- 0.01 %O ₂ , whichever is greater	+/- 1% F.S.
CO (ppm)		+/- 2% reading or +/- 1 ppm CO, whichever is greater	+/- 1% F.S.
CO or CH ₄	CO	+/- 2% reading or +/- 1 ppm CO, whichever is greater	+/- 2% F.S.
	CH ₄	+/- 4% reading or +/- 0.02% CH ₄ , whichever is greater	+/- 4% F.S.

Measurement conditions: Gas temperature; 25 °C,
Gas pressure; 0.1 MPa,
Optical path length; 1 m

Data Update

Cycle:

Approx. 2 seconds (Response time may increase for non-standard applications) If less than 2 seconds response is required, please consult with Yokogawa

Influences on the Measurement - Application dependent

A. Temperature: The temperature of the measured gas should be taken into account by the analyzer so that the reading can be corrected on a real time basis. The effect is specific to each different measurement gas.

- If the gas temperature is constant at the desired measurement condition, then a fixed gas temperature may be programmed into the analyzer. This fixed value can be used in real time by the analyzer to provide a temperature-compensated reading.
- If the gas temperature is relatively equal to the ambient temperature, then an integral sensor value may be utilized by the analyzer. This active ambient value is used real time by the analyzer to provide a temperature compensated reading.
- If the gas temperature is variable, then an external sensor value may be utilized by the analyzer. This active input value can be used in real time by the analyzer to provide a temperature compensated reading.

B. Pressure: The pressure of the measured gas must be taken into account by the analyzer so that the reading can be corrected on a real time basis. The effect is specific to each different measurement gas.

- If the gas pressure is constant at the desired measurement condition, then a fixed gas pressure may be programmed to the analyzer. This fixed value can be used in real time by the analyzer to provide a pressure compensated reading.
- If the gas pressure is variable, then an external sensor value may be utilized by the analyzer. This active input value can be used in real time by the analyzer to provide a pressure compensated reading.

• YH8000 HMI Unit

The YH8000 is an HMI designed specifically for the TDLS8000 series. The YH8000 features an easy-to-use touchscreen 7.5 inch color LCD which can be used to display maintenance information, display alarm statuses and records, and set all parameters of the TDLS8200.

The YH8000 can be installed directly on the TDLS8000 series or installed remotely.

An Ethernet connection is used to connect the YH8000 to up to four TDLS8000 series simultaneously via a hub.

Display: Touchscreen 7.5 inch TFT color LCD panel, 640 x 480 (VGA)
 Communication: Ethernet; RJ-45 connector
 Communication speed; 100 Mbps
 Case: Aluminum alloy
 Paint color: Mint green (RAL 190 30 15 or equivalent)
 Protection degree of enclosure: IP65, Type 4X
 Window: Polycarbonate
 Weight: Approx. 4 kg
 Cable gland for Japan Ex; (/JA1, /JA2) Approx. 320 g/pc
 Mounting: Analyzer mount (Front, left-side, right-side) with tilt function, Pipe mount, or Panel mount (Stainless steel)
 Cable Entries: 1/2NPT or M20x1.5 mm, two holes
 Installation conditions:
 Ambient operating temperature; -20 to 55°C
 Storage temperature: -30 to 70°C
 Humidity: 10 to 90%RH at 40°C (Non-condensing)
 Power Supply: 24V DC +/-10%
 Power consumption: Max.12 W
 Safety, EMC, and RoHS conformity standards:
 Safety conformity standards:
 CE, UKCA EN61010-1
 UL UL61010-1
 CSA CAN/CSA-C22.2 No.61010-1
 GB GB30439 Part 1
 Installation Altitude: 2000 m or less
 Installation category: I
 (Anticipated transient overvoltage 330 V)
 Pollution degree: 2, Indoor/Outdoor use
 EMC conformity standards:
 CE, UKCA EN55011 Class A Group 1
 EN61326-1 Class A Table 2 (For use in industrial location)
 RCM EN55011 Class A Group 1
 KC KN11 Class A Group 1, KN61000-6-2 (Korea Electromagnetic Conformity)
 RoHS conformity standards: EN IEC 63000:2018*
 *: For only YH8000-G1, -G2 (manufactured in Japan) and -S2
 Information of the WEEE Directive
 This product is purposely designed to be used in a large scale fixed installations only and, therefore, is out of scope of the WEEE Directive. The WEEE Directive does not apply.
 The WEEE Directive is only valid in the EU and UK.

Hazardous area classifications:

Division 2, Zone2: Nonincendive/Type n

YH8000-D2 (FM Approval for US)

Division system

Type of protection: Nonincendive for Class I, Division 2, Groups A, B, C, D, T5

Enclosure rating: Type 4X

Applicable standards: FM Class 3600: 2018
 FM Class 3611: 2018
 FM Class 3810: 2018
 NEMA 250: 2003

Zone system

Type of protection:

Class I, Zone 2, AEx nA ic IIC T5 Gc

Enclosure rating: IP65

Applicable standards: ANSI/UL 60079-0:2019,
 ANSI/UL 60079-11:2013
 ANSI/UL 60079-15:2013
 ANSI/UL 121201:2019
 ANSI/IEC 60529-2004

YH8000-C2 (FM Approval for Canada)

Type of protection: Ex nA ic IIC T5 Gc

Enclosure rating: IP65, Type 4X

Applicable standards:
 CAN/CSA No.94.2-07 (R2012)
 CAN/CSA-C22.2 No.60079-0:2019
 CAN/CSA-C22.2 No.60079-11:2014
 CAN/CSA-C22.2 No.60079-15:2016
 CAN/CSA-C22.2 No.61010-1:2012
 CAN/CSA No.60529:2005 (R2010)

YH8000-S2 (ATEX)

Type of protection: II 3 G Ex nA ic IIC T5 Gc

Enclosure rating:
 IP65 (In accordance with EN 60529)

Applicable standards:
 EN IEC 60079-0:2018,
 EN 60079-11: 2012, EN 60079-15: 2010

YH8000-E2 (IECEx)

Type of protection: Ex nA ic IIC T5 Gc

Enclosure rating:
 IP65 (In accordance with IEC 60529)

Applicable standards: IEC 60079-0: 2017,
 IEC 60079-11: 2011, IEC 60079-15: 2010

YH8000-J2 (Japan Ex)

Type of protection: Ex nA ic IIC T5 Gc

Enclosure rating:
 IP65 (In accordance with IEC 60529).

Applicable standards: JNIOOSH-TR-46-1:2020
 JNIOOSH-TR-46-6:2015
 JNIOOSH-TR-46-8:2015

YH8000-K2 (Korea Ex)

Type of protection: Ex nA ic IIC T5 Gc

Enclosure rating:
 IP65 (In accordance with IEC 60529)

Applicable standards: Notice of Ministry of LaborNo. 2021-22
 Harmonized with IEC60079-0: 2017, IEC 60079-11: 2011, IEC 60079-15:2010

YH8000-N2 (NEPSI)

Type of protection: Ex nA ic IIC T5 Gc

Enclosure rating:
 IP65 (In accordance with GB/T 4208)

Applicable standards: GB 3836.1-2010,
 GB 3836.4-2010,
 GB 3836.8-2014

YH8000-R2 (EAC)

Type of protection: 2Ex nA ic IIC T5 Gc X
Enclosure rating: IP65 (In accordance with
GOST 14254)
Applicable standards: GOST 31610.0-2014
GOST 31610.15-2014
GOST 31610.11-2014

YH8000-U2 (INMETRO)

Type of protection: Ex nA ic IIC T5 Gc
Enclosure rating: IP65
Applicable standards:
ABNT NBR IEC 60079-0:2020
ABNT NBR IEC 60079-11:2013
Versão Corrigida:2017
ABNT NBR IEC 60079-15:2019

● Calibration Cell

Used for off-line calibrations and validations.

Optical Path Length: 500 mm
Material: 316 SS (eq.), Aluminum,
BK-7, FKM
Part No.: K9777ZA (for O₂, CO),
Weight: Approx. 4.6 kg

■ MODEL AND CODES

● TDLS8200 Probe type Tunable Diode Laser Spectrometer (Note)

Model	Suffix Code	Option Code	Description
TDLS8200	.....	.....	Probe type Tunable Diode Laser Spectrometer
Structure	-G1 -G2 -D1 -C1 -E1 -S1	..... ..... ..... ..... ..... .....	General Purpose, cable entry/piping: NPT General Purpose, cable entry: Metric thread, piping: Rc FM (US) explosionproof, cable entry/piping: NPT FM (Canada) explosionproof, cable entry/piping: NPT IECEX explosionproof, cable entry: Metric thread, piping: Rc ATEX/UKEX explosionproof, cable entry: Metric thread, piping: Rc
Temperature	-L -M	..... .....	Standard < 600°C (*7) (*8) Mid temperature < 850°C (*6)
1st Gas Parameter	-C2 -C3 -C4	..... ..... .....	Carbon Monoxide ppm < 500°C (*1) Carbon Monoxide ppm < 850 °C (*1)(*7) CO ppm < 850°C + CH4 0-5%, combustion (*1)(*7)
2nd Gas Parameter	-X1 -X2	..... .....	Oxygen < 600°C, 0-25% (*2) Oxygen < 850°C, 0-25% (*6)(*8)
Probe length	-070 -100 -150 -200	..... ..... ..... .....	0.7m 1m 1.5m 2m
Probe material	-S -A	..... .....	316SS Alloy 800, Mid temperature (*6)(*8)
Flange	-U2 -U3 -U4 -D5 -D8 -D1 -J5 -J8 -J1 -J6 -P4 -P3	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	ANSI CLASS150-2-RF (Eq.) ANSI CLASS150-3-RF (Eq.) ANSI CLASS150-4-RF (Eq.) DIN PN16-DN50-D (Eq.) DIN PN16-DN80-D (Eq.) DIN PN16-DN100-A (Eq.) JIS 10K-50-FF (Eq.) JIS 10K-80-FF (Eq.) JIS 10K-100-FF (Eq.) JIS 10K-65-FF (Eq.) JPI Class 150 4 RF(Eq.) JPI Class 150 3 RF(Eq.)
I/O interface	-A1	.....	Analog with HART + Modbus Ethernet
SI Unit	-J -N	..... .....	Only SI unit SI unit or non SI unit (*3)
—	-N	.....	Always -N
Option		/RX /RC /SCT /SIL	Reference Cell for O ₂ (*4) Reference Cell for CO (*5) Stainless Steel Tag Plate with IEC61508 SIL2 (SC3)

*1: When CO and CH₄ component coexist, please contact YOKOGAWA.

*2: When the process gas pressure is out of 90 to 130 kPa (abs.), or the process gas contains CO₂ ≥ 40 % or H₂ ≥ 20 % as coexisting gas components, please contact YOKOGAWA.

*3: Enable only to an end user located outside of Japan

*4: The Option "/RX" can be used when Gas Parameter "-X1" "-X2" is selected.

*5: The Option "/RC" can be used when Gas Parameter "-C2", "-C3" or "-C4" are selected. When both "-C3" or "-C4" of the Gas Parameter is selected, "/RC" must be specified.

*6: When Temperature "-M" is selected, only the following can be selected.

TDLS8200-**-M-aa-bb-cc-A-dd-A1-*N (Option)

-aa: -C3, -C4

-bb: -X2

-cc: -100, -150

-dd: Except -U2, -D5, -J5

*7: When Temperature "-L" is selected, the temperature specification of "-C3" or "-C4" is 600°C or below.

*8: When Temperature "-L" is selected, neither "-X2" nor "-A" can be selected.

vertical upwards is not possible

Model	Suffix Code	Option Code	Description
YH8000		HMI Unit
Type	-G1 -G2 -GR -D2 -C2 -S2 -E2 -J2 -K2 -N2 -R2 -U2	 	General Purpose, NPT thread for cable entry General Purpose, Metric thread for cable entry EAC General Purpose, Metric thread for cable entry FM (US) Class I Div 2, Zone2, NPT thread for cable entry FM (Canada) Class I Zone2, NPT thread for cable entry ATEX Type of protection "n", Metric thread for cable entry (*3) IECEx Type of protection "n", Metric thread for cable entry Japan Ex / Zone 2, Metric thread for cable entry (*2) Korea Ex Type of protection "n", Metric thread for cable entry NEPSI Type of protection "n", Metric thread for cable entry EAC Type of protection "n", Metric thread for cable entry INMETRO Type of protection "n", Metric thread for cable entry
Language	-E	English and 9 languages (*1)
—	-N	Always -N
Option		/M /P /W /S /C /SCT /JA1 /JA2	Mounting kit for TDLS8000 series Pipe mount Wall mount Sun Shield Local HMI connection cable: 3m Stainless Steel Tag Plate Cable gland for Japan Ex (Cable O.D. 8-12mm, G1/2), 1 pc(*2) Cable gland for Japan Ex (Cable O.D. 8-12mm, G1/2), 2 pc(*2)

One analyzer has English and 9 languages.

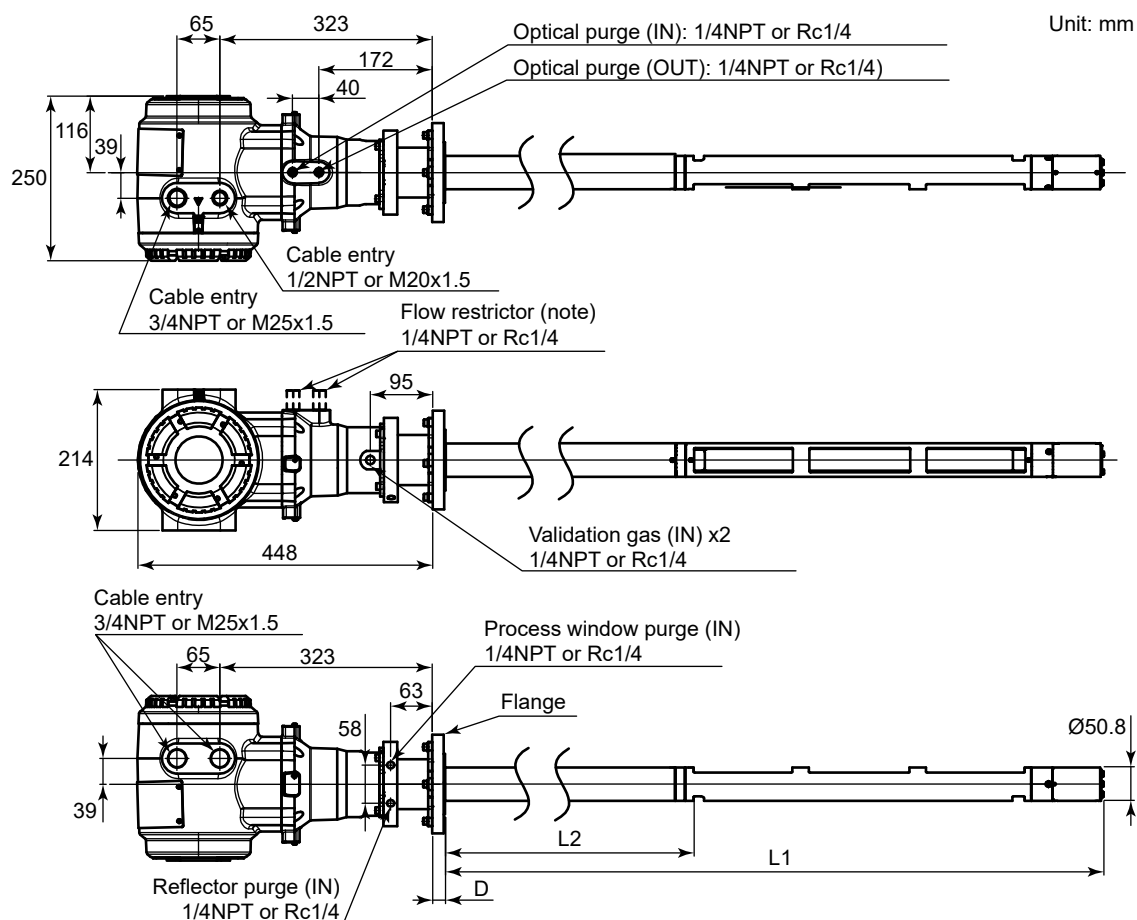
*2: For Japan Ex/Zone 2 certified model (YH8000-J2), specified cable glands shall be attached to each cable entry for wiring.
For detailed information, refer to Japanese General Specifications (GS 11Y01D01-01JA).

The Option “/JA1” and “/JA2” can be used only when Japan Ex/Zone 2 certified model (YH8000-J2) is selected.

*3: This model is available for UKCA.

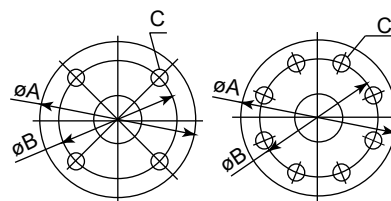
EXTERNAL DIMENSIONS

TDLS8200 Probe type Tunable Diode Laser Spectrometer (Standard probe)



Flange	A	B	C	D
ANSI Class150-2-RF	150	120.7	4-Ø19	20
ANSI Class150-3-RF	190	152.4	4-Ø19	24
ANSI Class150-4-RF	230	190.5	8-Ø19	24
DIN PN16-DN50-D	165	125	4-Ø18	20
DIN PN16-DN80-D	200	160	8-Ø18	20
JIS 10K-50-FF	155	120	4-Ø19	16
JIS 10K-80-FF	185	150	8-Ø19	18

L1	700	1000	1500	2000
L2	78	378	878	1378

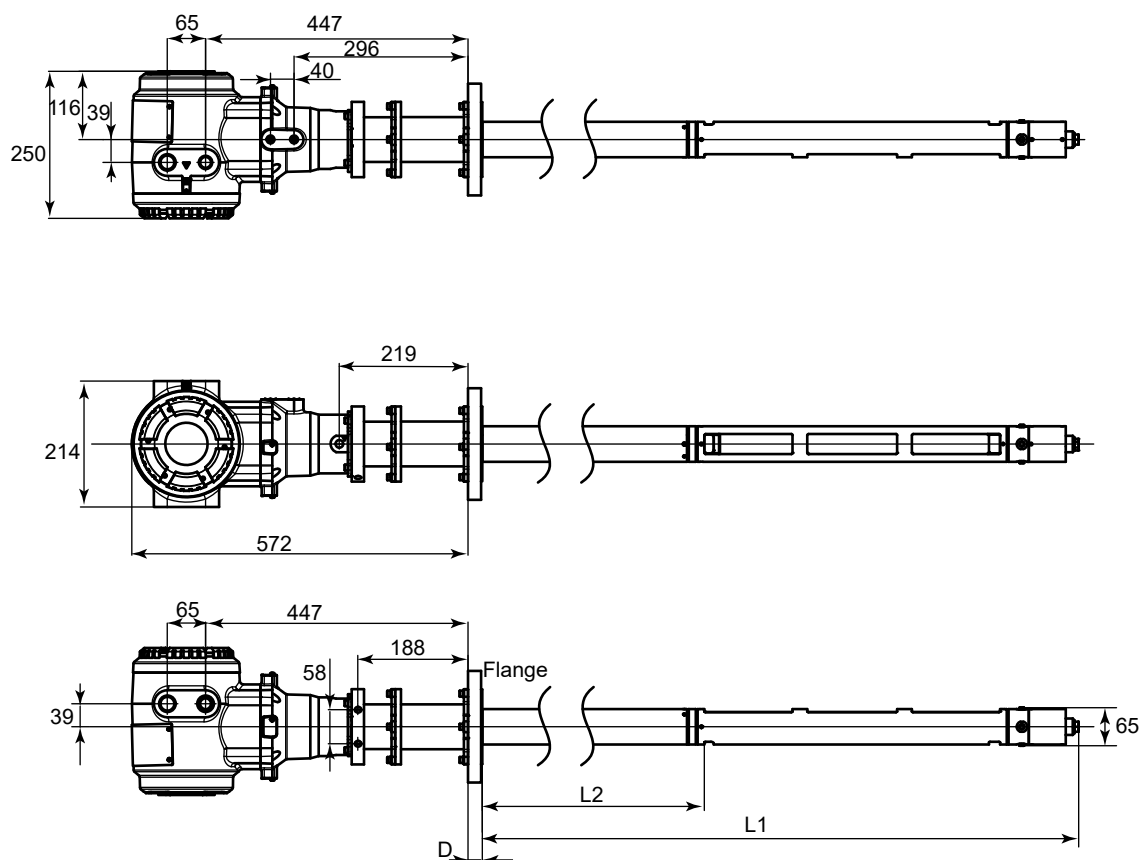


Flange

(note) The flow restrictors are attached
in the case of type -C1, -D1, -E1, -S1

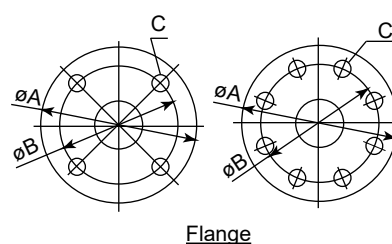
■ TDLS8200 Mid temperature probe type

Unit: mm



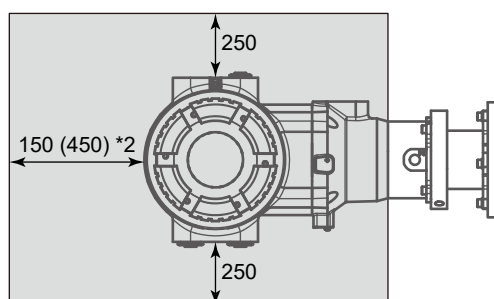
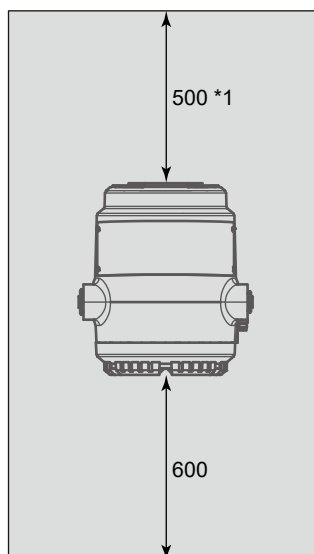
Flange	A	B	C	D
ANSI Class150-3-RF	190	152.4	4-Ø19	24
ANSI Class150-4-RF	230	190.5	8-Ø19	24
DIN PN16-DN80-D	200	160	8-Ø18	20
DIN PN16-DN100-A	220	180	8-Ø18	22
JIS 10K-65-FF	175	140	4-Ø19	18
JIS 10K-80-FF	185	150	8-Ø19	18
JIS 10K-100-FF	210	175	8-Ø19	18

L1	1000	1500
L2	363	863



- Maintenance space

Unit: mm

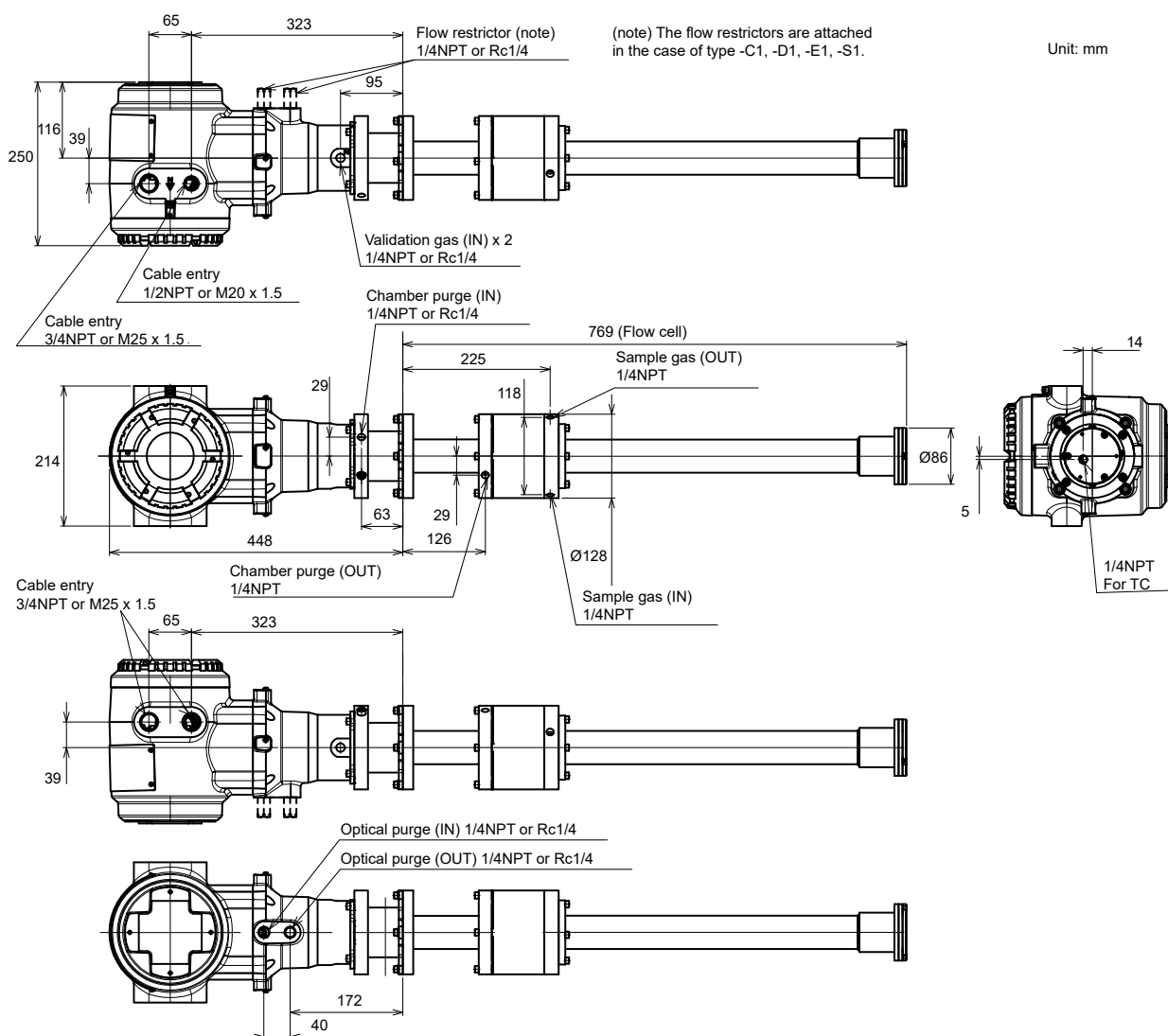


*1: When installing YH8000 on TDLS8200 with /M, it is necessary to secure this space.

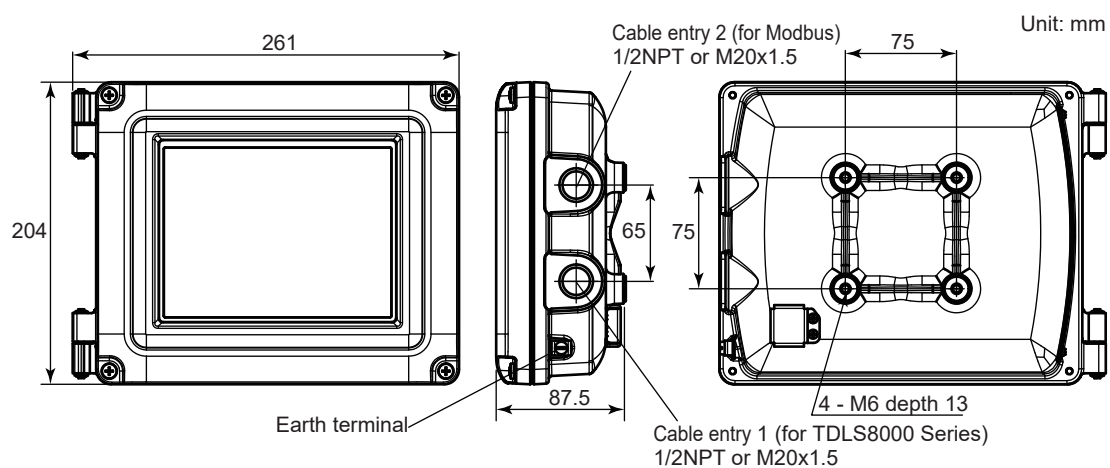
*2: When connecting the calibration cell, it is necessary to secure this space. If install or uninstall of probe, need the additional space depend on probe length.

• Flowcell type (reference)

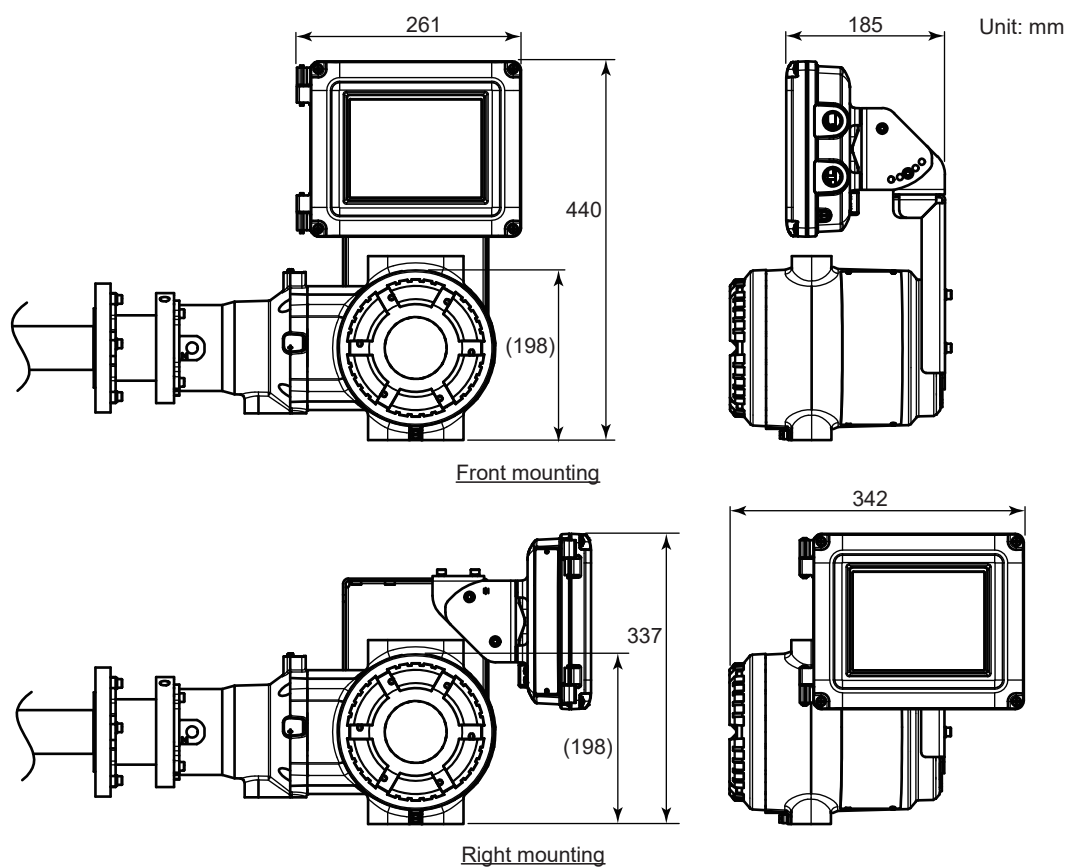
For applications where the TDLS8000, TDLS8100 or TDLS8200 could not be installed or inserted due to the process size, etc., a sampling system can be constructed by replacing the probe part of the TDLS8200 with a flow cell part . Please contact Yokogawa.



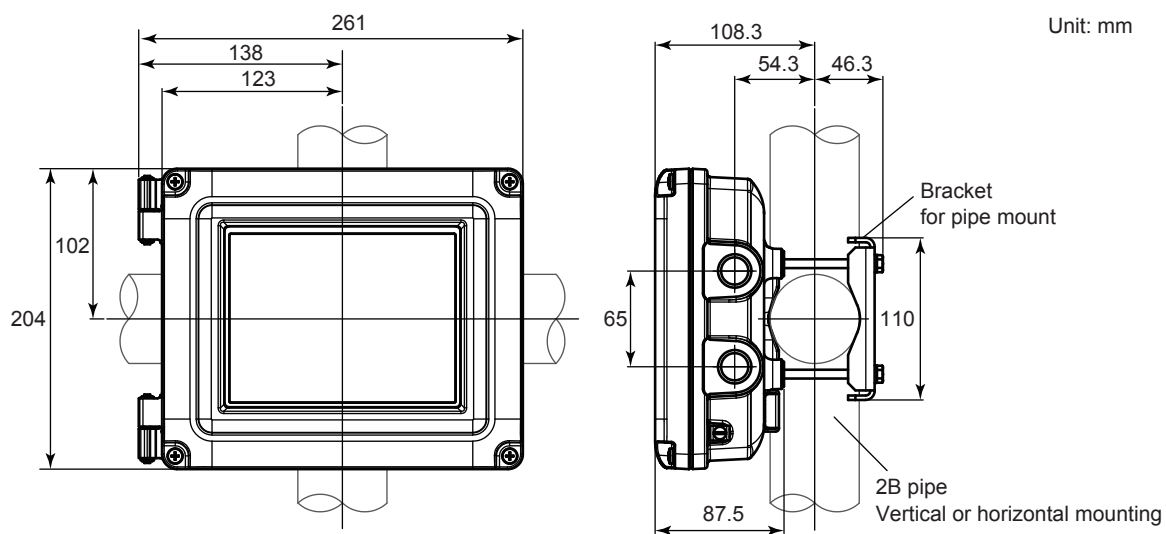
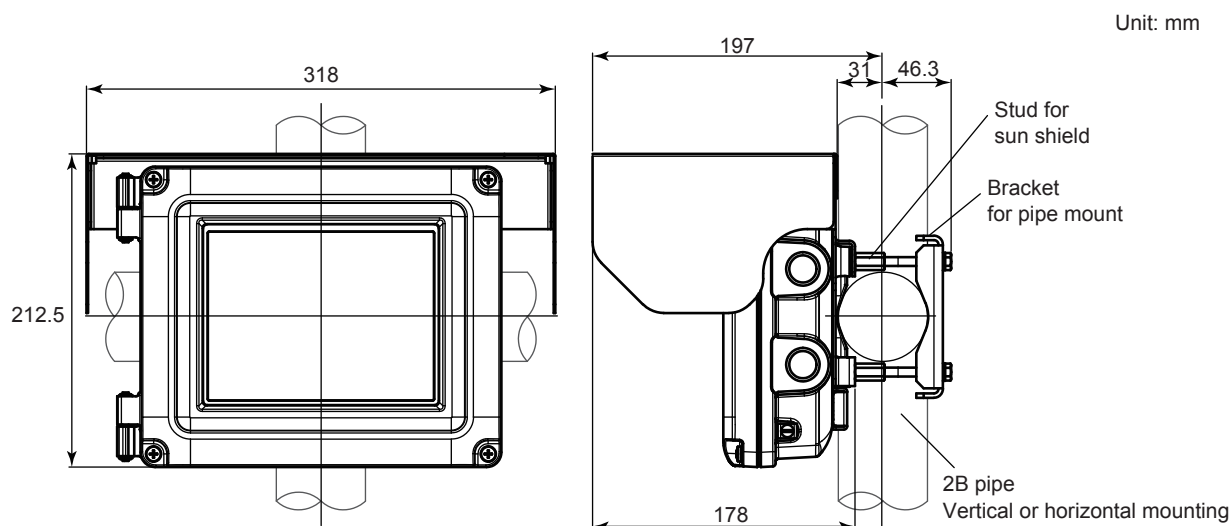
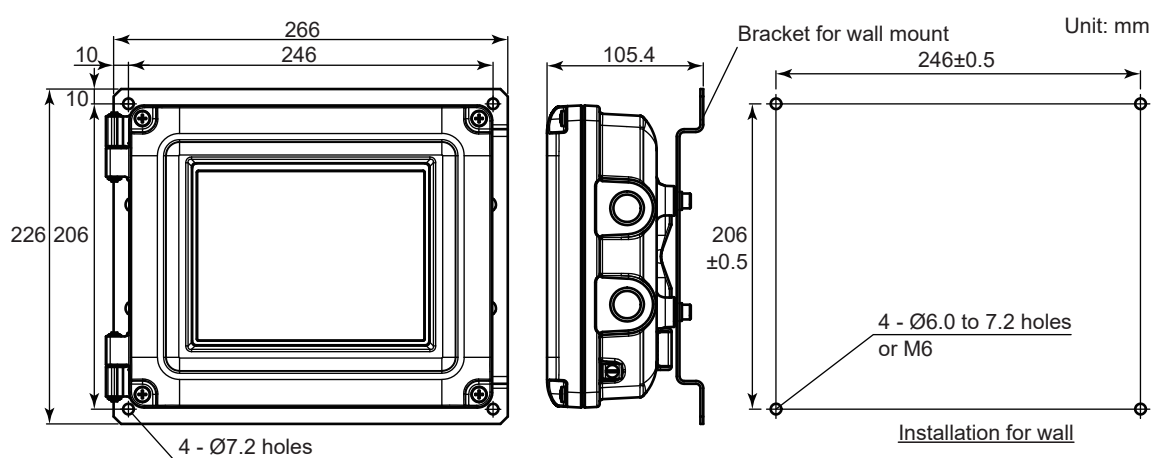
■ YH8000 HMI Unit



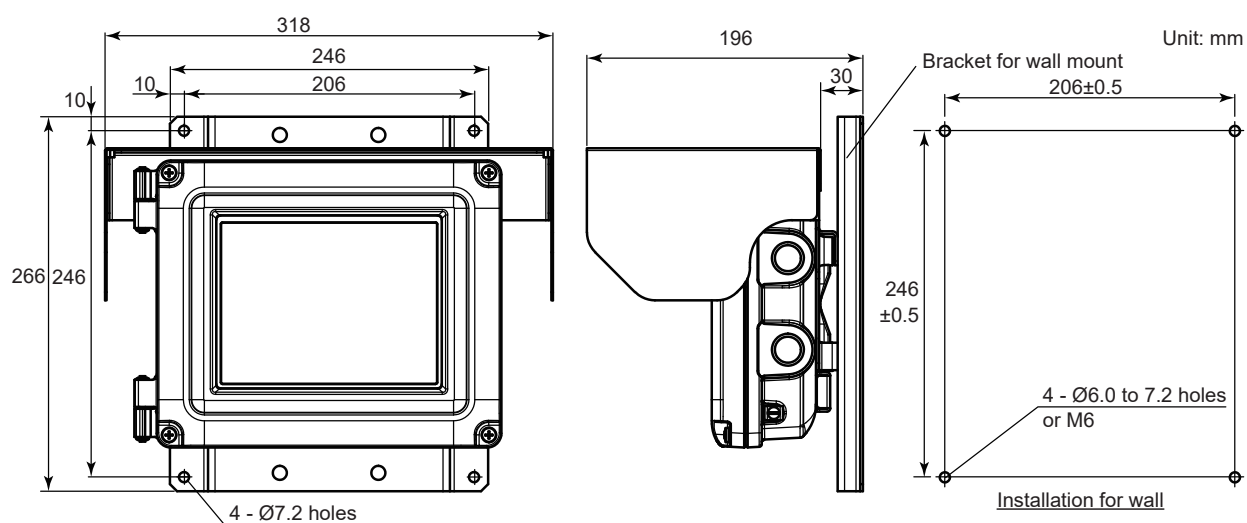
Mounting kit for TDLS8000 series (Option code: /M)



Available for left mounting

Pipe mount (Option code: /P)**Sun Shield (Option code: /S)****Wall mount (Option code: /W)**

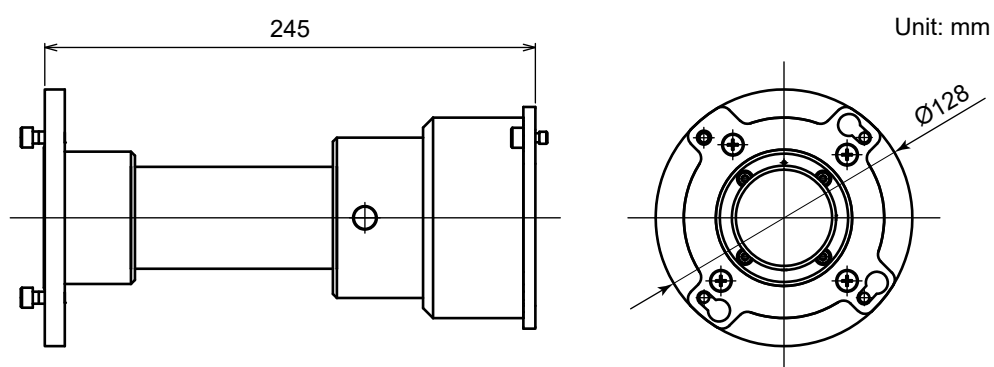
*: The wall construction for mounting has to be designed for 4 times the weight of the YH8000.
Bracket for wall mount can be placed in lengthwise

Sun Shield (Option code: /S)

When the sun shield is mounted, the bracket for wall have to be placed in widthwise.

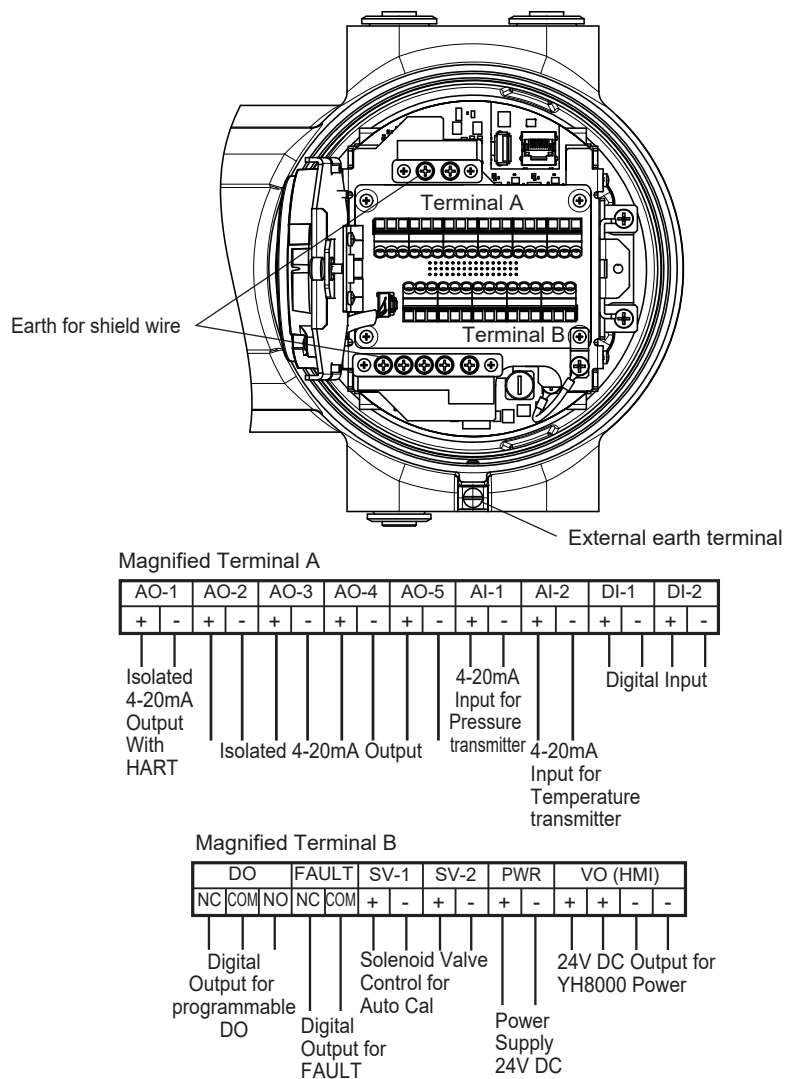
■ Calibration Cell

Part number: K9777ZA

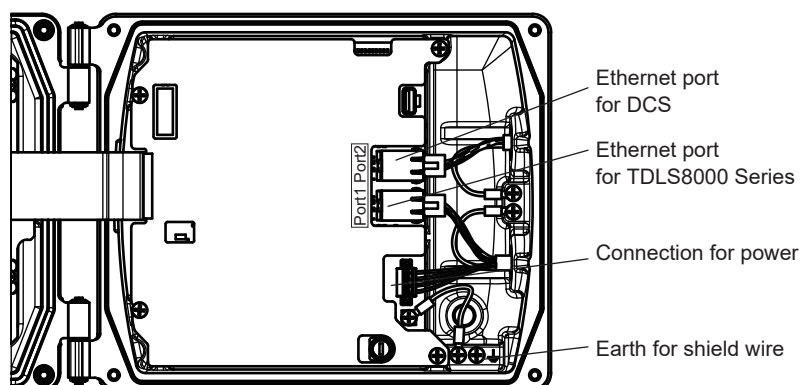


■ WIRING

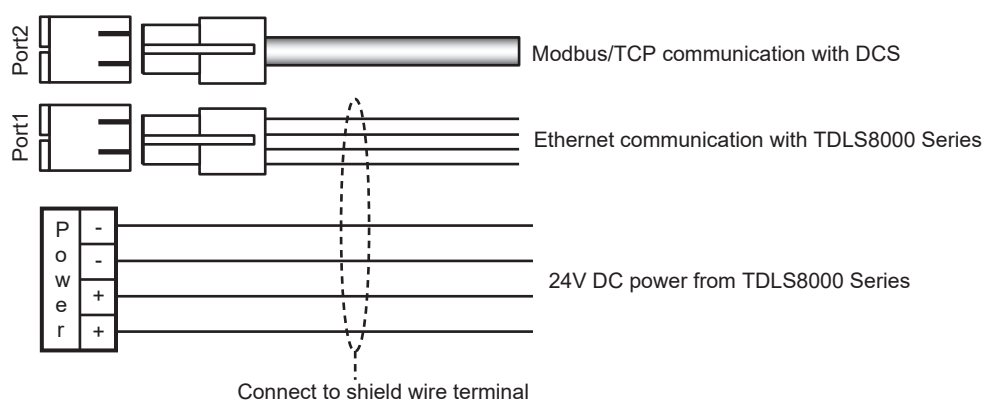
Wiring the TDLS8200 Probe type Tunable Diode Laser Spectrometer



Wiring the YH8000 HMI UNIT

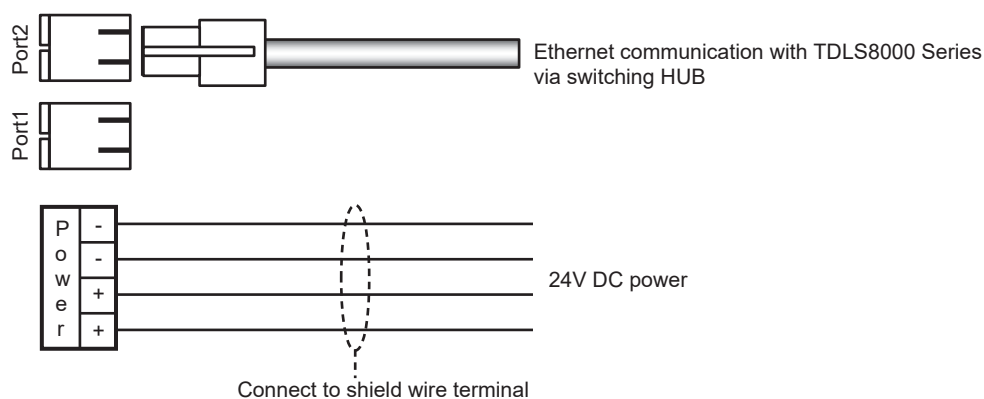


Local HMI configuration



- Connection cable between TDLS8000 Series and YH8000 must be use special cable which can be specified option code "/C."
- Maximum cable length between TDLS8000 Series and YH8000 is 3m.
- Maximum cable length between YH8000 and DCS is 100m.

Remote HMI configuration



- Maximum cable length between YH8000 and Switching HUB is 100m.