

AQ7275 OTDR

Optical Time Domain Reflectometer



- Wide range of models available
- Supporting FTTH to core networks
- Short dead zone (0.8 m)
- High dynamic range (45 dB)

Dead zone

Dynamic range

For more information, go to tmi.yokogawa.com
Test & Measurement Instruments

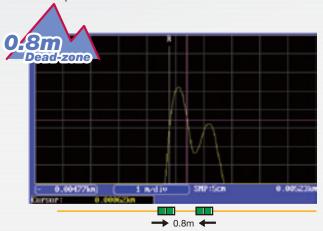
Superfor cost performance, easy to operate Makes your work more efficient ===

Meets a broad range of measurement needs from FTTH to metro, core networks.



Event Dead Zone 0.8 m

The AQ7275's short event dead zone enables detection of closely spaced events in cables installed in offices and customer premises.



High Dynamic Range up to 45 dB

The high dynamic range model (735034) can achieve the dynamic range of 45 dB. This high dynamic range is effective in measuring a transmission line consisting of long fiber cables and a splitter with a large loss.



Quick Startup within 10 Seconds

Now measurements can be started quickly upon arrival at the site. 10 seconds to power-up from completely OFF to fully ON! With such a fast power-up time, battery life can be extended by turning the power off while not in use at the job site without any concern about the power-up time when the next job is ready. It's ready when you're ready!

Wide Range of Models Available

	141190	or modele	<i>iranabio</i>				
Applicable fiber	No. of Wavelength	Wavelength	Dynamic range	Model	Descriptions		
	1	1650nm	30dB	735031	1650nm model, supporting maintenance wavelength of 1650nm including 1310/1550nm cut filter.		
	2	1310/1550nm	34/32dB	735032	Standard model for installation and maintenance of FTTH		
	2	1310/1550nm	40/38dB	735033	Standard model for installation and maintenance of Metro and Access network		
CME	2	1310/1550nm	43/41dB 45/43dB(typ)	735034	High dynamic range model for installation and maintenance of Core an Metro network		
SMF	3	1310/1490/1550nm	34/30/32dB	735035	3-wavelength model for PON system, supporting 1490nm		
	3	1310/1550/1625nm	40/38/33dB	735036	Three-wavelength model, supporting a maintenance wavelength of 1625nm including 1310/1550nm cut filter		
	3	1310/1550/1650nm	40/38/30dB	735037	Three-wavelength model, supporting a maintenance wavelength of 1650nm including 1310/1550nm cut filter.		
	3	1310/1550/1625nm	40/38/36dB	735038	Three-wavelength model, supporting a maintenance wavelength of 1625nm		
MMF SMF	4	850/1300nm 1310/1550nm	22.5/24dB (62.5Gl) 21.5/23dB (50Gl) 40/38dB (SMF)	735041	Four-wavelength model for installation and maintenance of LAN and FTTH with support for both multimode and single mode fiber. Dynamic range is specified when measuring 50Gl fiber.		

5 OTDR

Easy to Operate for Beginners and Experts

Setup mode can be selected according to the skill level of technicians.



Full Auto Mode

Simply select the measured wavelength and the AQ7275 takes care of the rest by automatically setting the optimal measurement conditions and by performing measurement and event analysis, and fully automated data saving.

Select wavelength Full auto





Wizard Mode

Display the guidelines for the setup items from the Setup menu. Follow the step-by-step instructions to complete the setup.

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Detail Mode

This mode allows you to set all the detailed settings, not only the measurement and analysis settings but also the screen display and system settings.

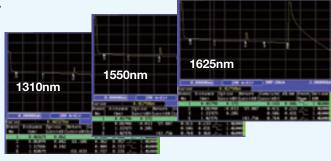
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Measurement with Auto Wavelength Switching - Multi Wavelength Measurement Mode

Prepare multiple wavelengths to measure, then press a button. Multi Wavelength Measurement is a mode in which multiple specified wavelengths from the same optical port are measured automatically in order. You can also specify to perform analysis or file saving as needed for each measurement.

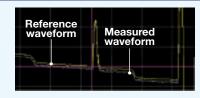
Wavelength switches automatically





Measurement with Comparison to Reference Waveform – Trace Fix Function

You can freeze the display of one trace and overlap it with real time or averaged waveforms for comparison. This is useful to create a template when installing multicore fiber, or for checking aged deterioration during maintenance on existing fiber networks. In addition to the last-measured waveform, a waveform can be loaded from a file to be used as the reference waveform.



Trace Fix Function

USB Function

The AQ7275 has two USB 1.1 compliant connector ports as standard (Type A and Type B). Type A port is for USB memory and USB hard disk drive for storage. Type B port is for connecting external PC. AQ7275 can be remotely controlled from external PC, and the internal memory of AQ7275 can be accessed from external PC directly.



Type A

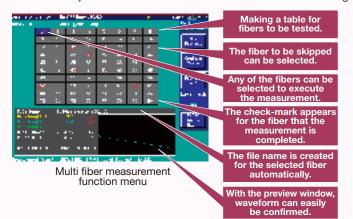
Increase Working Efficiency

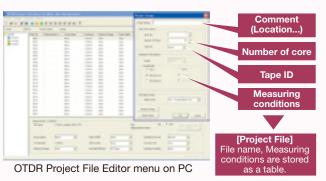
Multi Fiber Measurement Function

The Multi fiber measurement function automatically performs measurements and data-filing according to a pre-established file name table. At worksite, you can execute it by simply selecting a fiber number in the table.

The saved waveform can be easily shown in the preview window by selecting the core number in the table.

The OTDR Project File Editor included in AQ7932 Emulation Software greatly saves time to create file name table.





Measured Data Analysis and Report Creation Tool –AQ7932 OTDR Emulation Software (Sold Separately)

AQ7932 is application software that performs analysis of trace data measured by AQ7270 and AQ7275 OTDR on a PC, and creates reports. The report creation wizard function makes this task simple. AQ7270 and AQ7275 OTDR data can be easily loaded onto a PC using USB memory or storage function.

■ Trace Analysis

You can edit event search conditions, approximate curve line settings, and other analysis conditions, and repeat the analysis. Operation is also easy. Simply click the function icon.

■ Variety of Analysis Functions

Display up to eight traces on screen, and perform a variety of analyses including multi-trace analysis and differential trace analysis for comparing recent waveforms with old ones, and use the 2 way trace analysis function for analyzing average values of data measured from both directions in the optical fiber.

■ OTDR Project File Editor for Multi Fiber Measurement

By registering a comment, number of cores, Tape ID, wavelength, etc., the OTDR Project File Editor creates "File name table" called "Project". It can be used in combination with Multi fiber measurement function available on AQ7270 and AQ7275.

■ Creating Reports

You can compile trace and measured values from trace files and creates a report. Reports can also be created in Excel and CSV formats. Reports can be created easily by just following the step-by-step instructions in the report wizard.

Functionality

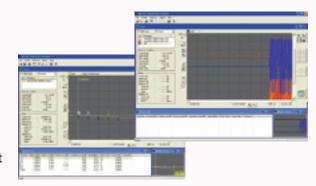
File format: .SOR (Bellcore), .SOR (Telcordia [AQ7275, AQ7270, AQ7260]), .TRD (AQ7260), .TRB (AQ7250), .BMP (BMP), .CSV (Data CSV), .CSV (Event List CSV) Report output format: Print output, CSV file, XLS file

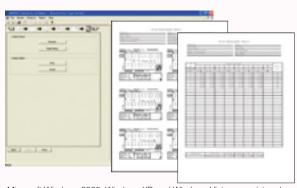
Recommended Operating Environment (Software and Hardware)

OS: Microsoft Windows 2000, Microsoft Windows XP, Microsoft Windows Vista * Excel: Microsoft Excel 2000 or later (when the XLS file output function is used) PC: Clock speed: Environment in which the OS operates smoothly.

HD capacity: 20 MB or more space required at the time of installation Memory capacity: 128 MB or more (256 MB or more recommended) Display: Resolution of 1024×768 pixels or better

Disc drive: CD-ROM drive





Microsoft Windows 2000, Windows XP, and Windows Vista are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries. The TM and ® symbols are not used to indicate registered trademarks and trademarks in this document.

(*) Microsoft Windows Vista is to be supported in Ver3.03 and later.

Support Remote Monitoring NEW

Remote Control Software

OTDR can be remotely controlled from personal computer (PC) through Ethernet or the USB interface. The front panel image of connected OTDR is displayed on the screen of PC with remote control software, and OTDR can be controlled from PC by using the mouse by a similar sense of the operation of OTDR.

Monitoring Software for Intermittent Disconnection

This PC software is for detecting and monitoring intermittent disconnection of optical fiber which is connected to OTDR. OTDR is controlled by personel computer (PC) through Ethernet or USB interface. Intermittent disconnection (200ms or more) can be detected and measured trace by OTDR can be stored in PC. By using this software point of intermittent disconnection can be located.



More Value Added to OTDR - Wider Range of Optional Functions

Stabilized Light Source

This light source option can be used for measuring losses. It can also be used for optical fiber identification, because it is capable of outputting not only continuous wave (CW) light but also a 270-Hz modulated light.

* The stabilized light source option cannot be used for the 735041 (MMF).



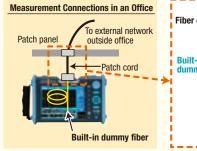


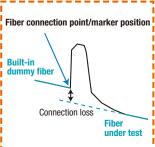
Loss Measurement

Built-in Dummy Fiber

You can use the dummy fiber to effectively detect abnormal nearend connection loss.

- * The dummy fiber option cannot be used for the 735041.
- * The built-in dummy fiber is not attachable and removable.





Angled-PC Connector

You can connect an optical fiber with an angled-PC connector directly to the OTDR. The angled PC is often used for CATV networks to reduce the influence of reflection.

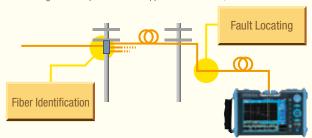
External Large Capacity Battery

The operation time will triple that of a standard built-in battery.

Visible Light Source

This option can be used for identifying the multicore fiber cable and visually checking for a failure. The adopting the connector connection method enables the visible light to reach greater distances with less light leakage.

* The visible light source option cannot be applied for the 735036, 735037 and 735041.



Optical Power Monitor

This is useful for simply checking optical power when performing link loss testing or troubleshooting.

* The optical power monitor option cannot used for the 735031 and 735041 (MMF).

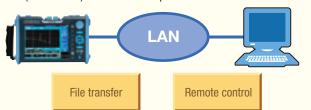




Power Check

Printer/LAN

Measured results can be printed on site. It makes it easy to attach waveforms and results to your report. Remote control and FTP (file transfer) via LAN is also possible.



Sampling resolution 5 cm, 10 cm, 20 cm, 50 cm, 1 m, 2 m, 4 m, 8 m, 16 m, 32 m

Readout resolution 1 cm (Min.)

Number of sampled data Up to 50,000 points

Group refractive index 1.30000 to 1.79999 (in 0.00001 steps)

Unit of distance km, kf or miles

Distance measurement accuracy Sum of the following 3 errors

Offset error: ±1 m

Scale error: Measurement distance \times 2 \times 10⁻⁵ Sampling error: \pm 1 sampling resolution

Vertical Axis Parameters

Vertical axis scale 0.2 dB/div, 0.5 dB/div, 1 dB/div, 2 dB/div, 5 dB/div, 7.5 dB/div

Readout resolution 0.001 dB (Min.) Loss measurement accuracy* ±0.05 dB/dB

*When the measuring loss is 1 dB or less, the accuracy is within $\pm 0.05 \ \text{dB}.$

OTDR Measurement Function

Distance measurement Displays up to eight digits of the relative one-way direction

between two arbitrary points on the trace.

Loss measurement Displays one-way loss in steps of 0.001 dB to a maximum of 5 digits. Displays the one-way loss, loss per unit length,

and splice loss between any arbitrary points on the trace.

Return loss measurement Measures return loss and total return loss of a fiber cable

or between two arbitrary points on the trace.

Scheduling function Performs measurements and saves results onto a USB storage in a user defined time frame and interval

automatically.

OTDR Analysis Functions

Analysis functions Multi trace analysis, 2 way trace analysis, differential trace

analysis, section analysis

Internal Memory

Memory capacity 1000 waveforms or more

Can store measured waveforms and measurement conditions

Display

Display 8.4-inch color TFT LCD, semi-transparent Total number of displayed pixels* 640 (horizontal) × 480 (vertical) pixels

*The LCD may contain some pixels that are always ON or OFF (0.002% or fewer of all displayed pixels including RGB), but this is not indicative of a general malfunction.

External Interface

USB USB1.1 Type A and Type B, one each

Type A: For external memory

Type B: For connecting to an external PC for remote control or access to the OTDR's internal memory.

File Formats

File formats Read: SOR, TRD, TRB, SET (AQ7270/75)
Write: SOR (Telcordia), SET, CSV, BMP, JPG, PNG

General Specifications

Operating environment Temperature 0 to 45°C (0 to 35°C when charging the battery)

Humidity 85% RH or less (no condensation)

Storage temperature -20 to 60°C

Battery Operation time 6 hours (18 hours with external large capacity battery)*1

Recharge time 5 hours *2

Rated power voltage 100 to 240 VAC Rated supply frequency 50 to 60 Hz

Power consumption Max 70 W (when charging battery and printing with optional printer) Dimensions (W) $287 \times (H) 197 \times (D) 85$ mm (excluding projections or options)

Weight Approx. 2.8 kg (excluding options)

Laser safety standards Class 1 M (IEC 60825-1:1993 + A2:2001)*3

21CFR1040.10*4

Safety standard EN61010-1

Emission EN61326-1 Class A

EN55011 Class A Group 1

Immunity EN61326-1 Table 2

*1 Measurement for 30 seconds in every 10 minutes without any options and in power save mode (Auto Power OFF 1 minute)

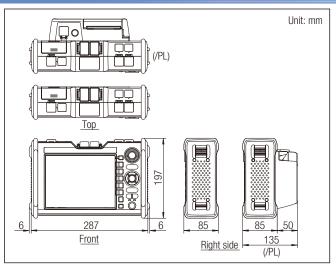
*2: Ambient temperature of 23°C, power OFF



IEC 60825-1

21CFR1040.10

External Dimensions



Specifications by Model

Model	735031 *11	735032	735033	735034	735035				
Wavelength *13	1650±5nm*1, ±10nm*2 1310/1550±25 nm		1310/1550±25 nm	1310/1550±25nm	1310/1490/1550±25nm				
Applicable fiber		SM (ITU-T G.652)							
Distance range		500m, 1km, 2km, 5km, 10km, 20km, 50km, 100km, 200km, 300km, 400km							
Pulse width *3	3ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1µs, 2µs, 5µs, 10µs, 20µs								
Dynamic range	30 dB *4	34/32 dB *4	40/38 dB *4	43/41 dB *4, 45/43 dB (typ)	34/30/32 dB *4				
Event dead zone *10	0.8m *5	0.8m *5	0.8m *5	0.8m *5	0.8m *5				
Attenuation dead zone *10	12 m (typ) *6	7/8 m (typ) *6	7/8 m (typ) *6	7/8 m (typ) *6	7/8/8 m (typ) *6				

Model	735036 *11	735037 *11 735038		735041		
Wavelength *13	1310/1550±25 nm 1625±25 nm	1310/1550±25 nm 1650±5nm*1, ±10nm*2	1310/1550/1625±25 nm	1310/1550±25nm	850/1300±30nm	
Applicable fiber	Applicable fiber SM (ITU-T G.652)				GI (62.5/125μm, 50/125μm)	
Distance range	500m, ⁻	500m, 1km, 2km, 5km, 10km, 20km, 50km, 100km				
Pulse width *3	3ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1µs, 2µs, 5µs, 10µs, 20µs 3ns, 10ns, 20ns, 50ns, 100 200ns, 500ns, 1µs, 2µs, 5µ					
Dynamic range	40/38/33dB *4	40/38/30dB *4	40/38/36dB *4	40/38dB *4	21.5/23dB(50/125µm) 22.5/24dB(62.5/125µm) *8	
Event dead zone *10	0.8m *5	0.8m *5	0.8m *5	0.8m *5	1m *9	
Attenuation dead zone *10	7/8/12 m (typ) *6	7/8/12 m (typ) *6	7/8/12 m (typ) *6	7/8 m (typ) *6	6/10 m (typ) *12	

- At a point -20 dB from the pulse light output peak value (measured 30 minutes or more after power-on at an ambient temperature of 23°C)
- *2 At a point -60 dB from the pulse light output peak value (measured 30 minutes or more after power-on at an ambient temperature of 23°C)
 *3 Pulse width setting range depends on the distance range

*4 SNR:1, pulse width: 20 µs, distance range: 200 km, sampling resolution: 8 m, measurement time: 3 minutes. When built-in dummy fiber and angled-PC connector are used, each dynamic range decreases by 0.5 dB

*5 Pulse width of 3 ns. return loss of 45 dB or more at a point 1.5 dB below the peak value (not saturated)

*6 Pulse width of 10 ns and return loss of 45 dB or more at a point where the backscatter level is within ±0.5 dB of the normal value

*7 Pulse width of 2 or 5 µs when the measured wavelength is 1300 nm
 *8 SNR = 1 at pulse width of 500 ns (850 nm) and 1 µs (1300 nm), sampling resolution of 8 m, and measurement time of 3 minutes

*9 Pulse width of 3 ns and return loss of 40 dB or more at a point 1.5 dB below the peak value (not saturated) *10 At group reflective index 1.5

*11 Pulse light output power at 1625 nm and 1650nm, 15dBm or less, built-in 1310/1550nm cut filter

*12 Pulse width of 10ns and return loss of 40dB or more at a point where the backscatter level is within ±0.5dB of the normal value

*13 Pulse width of 1 us

Note: Specifications without any special remarks are assured at 23°C±2°C

Factory Installed Optional Specifications

Stabilized Light Source Function (/SLS option)

Shared with the OTDR (at the same port) Optical connector

Center wavelength OTDR's center wavelengths -5 dBm or more (at 23°C±2°C) Light output level ±0.1 dB (±0.15 dB for 1650 nm) Output level stability

(Constant temperature for 5 minutes) Modulation frequency CW. 270 Hz * Unavailable for the 735041 (MMF)

Visible Light Source (/VLS option)

Optical connector Port is not shared with the OTDR

Center wavelength 650 nm + 20 nmLight output level Peak value -3 dBm or more

Modulation frequency 2 Hz Laser safety standard Class 3R *Unavailable for the 735036, 735037 and 735041



Power Monitor Function (/PM option)

Shared with the OTDR (at the same port) Optical connector

(735036, 735037: 1310/1550 nm port)

Measurement wavelength 1310, 1490, 1550, 1625, 1650 nm

Measurement range*1 -50 to -5 dBm Measurement accuracy*2 $\pm 0.5 dB$

*1 CW light, absolute maximum input level 0 dBm (1 mW)

*2 CW light, wavelength 1310 nm, -10 dBm for input, 23°C±2°C

*Unavailable for the 735031 and 735041 (MMF)

PON measurement (/PN option)

735031, 735033, 735036, 735038 Applicable models

25/25/23/19dB (typ) Dynamic range

(1310nm/1550nm/1625nm/1650nm)

Applicable pulse width 50ns, 100ns, 200ns, 500ns, 1µs

* Dynamic range is for the 100ns of pulse width.

High Dynamic range (/DR option)

Applicable model

36dB (1310nm) / 34dB (1550nm)

 * SNR:1, pulse width: 20 μs , distance range: 200 km, sampling resolution: 8 m, measurement time: 3 minutes. When built-in dummy fiber and angled-PC connector are used, each dynamic range decreases by 0.5 dB

Built-in Printer/LAN Function (/PL option)

Thermal line-dot Printing method 576 dots/line Dot density Paper width

Operating environment Temperature 0 to 40°C

Humidity 10 to 80% RH (no condensation)

-20 to 60°C Storage temperature

LAN function 10BASE-T/100BASE-TX (RJ-45) x1

Dummy Fiber (/DF option)

Optical fiber SM (ITU-T G.652) Optical fiber length Approx. 100 m

- * Dynamic range declines by 0.5 dB as a result of the addition of the fiber option.
- * Unavailable for the 735041

^{*} At pulse widths not applicable to the PON option, the performance is equal to the standard model.

Optical Time Domain Reflectometer AQ7275 OTDR

Model and Suffix Code

AQ7275 OTDR

			Optio					
Model	Optical power monitor	Stabilized light source	Visible light source	PON measure- ment	High Dynamic range	Printer/ LAN	Dummy fiber	Remarks
735031	_	√	√	√	_	√	√	1-port, SM1650nm, filter
735032	√	√	V	_		√	√	1-port, SM1310/1550 nm
735033	√	√	\checkmark	√	_	√	√	1-port, SM1310/1550 nm, High DR
735034	√	√	$\sqrt{}$	_	_	√	√	1-port, SM1310/1550 nm, Higher DR
735035	√	√	√	_	_	√	√	1-port, SM1310/1490/1550 nm
735036	√	√	_	√	_	√	√	2-port, SM1310/1550/1625 nm, filter
735037	√	√	_	_	_	√	√	2-port, SM1310/1550/1650 nm, filter
735038	√	√	1	√		√	1	1-port, SM1310/1550/1625 nm
735041	√*1	√*1	_	_	_	√	_	2-ports, MM850/1300 nm, SM1310/1550 nm

[:] MMF is not supported.

[:] Available.

	Suffix Codes	Description
	-SCC	SC type connector
	-FCC	FC type connector
Optical	-NON	No universal adapter
Connector	-USC	Universal adapter (SC)
	-UFC	Universal adapter (FC)
	-ASC	Angled-PC connector (SC) *2
	-HE	English
Languaga	-HC	Chinese/English
Language	-HK	Korean/English
	-HR	Russian/English
	-D	UL/CSA standard
	-F	VDE standard
Power Cord	-R	AS standard
Fower Coru	-Q	BS/Singapore standard
	-H	GB standard, Complied with CCC
	-P	Korean standard
	/PM	Optical power monitor
	/SLS	Stabilized light source
Options	/VLS	Visible light source
	/PN	PON measurement
	/DR	High Dynamic range
	/PL	Built-in printer, LAN
	/DF	Dummy fiber (SMF)
	/SB	Shoulder belt

^{*2:} An angled-PC connector cannot be used in the MM port of the 735040. -USC needs to be attached.

Example: 735033-USC-HE-D/PM/SLS

A07275 OTDR 1310/1550nm, high dynamic range, with SC universal adapter, English version, with a UL/ CSA standard power cord, with optical power monitor function and with stabilized light source function.

Standard Accessories

Power cord, AC adapter, battery pack, hand belt, user's manual (CD-ROM), operation guide

Accessories (Sold Separately)

Name	Model	Specifications
Soft carrying case	739860	
Battery pack	739880	
External large capacity battery	739881	With battery case and connection cable
Universal adapter (SC)	SU2005A-SCC	SC type
Universal adapter (FC)	SU2005A-FCC	FC type
Printer roll paper	A9010ZP	80 mm x 25 m
Shoulder belt	B8070CY	
	739870-D	UL/CSA standard
	739870-F	VDE standard
AC adapter	739870-R	AS standard
AC adapter	739870-Q	BS/Singapore standard
	739870-H	GB standard, Complied with CCC
	739870-P	Korean standard





External large capacity battery and case

Attachable to the AQ7275 series OTDR

Application Software

Model	Suffix Codes	Specifications
735070		AQ7932 Emulation Software (Ver3.0 or later)
	-EN	English

YOKOGAWA

Yokogawa Meters & Instruments Corporation

YOKOGAWA METERS & INSTRUMENTS CORPORATION

Global Sales Dept.

Tachihi Bld. No.2, 6-1-3 Sakaecho, Tachikawa-shi, Tokyo, 190-8586 Japan Phone: +81-42-534-1413 Facsimile: +81-42-534-1426

YOKOGAWA CORPORATION OF AMERICA

2 Dart Road, Newnan, GA. 30265-1094 U.S.A. Phone: +1-770-253-7000 Facsimile: +1-770-254-0928

YOKOGAWA EUROPE B. V.

Euroweg 2 3825 HD Amersfoort, THE NETHERLANDS Phone: +31-88-4641000 Facsimile: +31-88-4641111

YOKOGAWA ENGINEERING ASIA PTE. LTD.

5 Bedok South Road, Singapore 469270 SINGAPORE Phone: +65-6241-9933 Facsimile: +65-6241-2606

YOKOGAWA AMERICA DO SUL LTDA. Praca Acapulco, 31-Santo Amaro, Sao Paulo/SP, BRAZIL CEP-04675-190 Phone: +55-11-5681-2400 Facsimile: +55-11-5681-4434

YOKOGAWA MEASURING INSTRUMENTS KOREA CORPORATION

City Air Terminal Bldg.,405-9, #159-6, Samsung-dong, Kangnam-ku, Seoul, 135-728 KOREA

Phone: +82-2-551-0660 to 0664 Facsimile: +82-2-551-0665

YOKOGAWA AUSTRALIA PTY. LTD.

Tower A/112-118 Talavera Road Macquarie Park, NSW 2113

Phone: +61-2-8870-1100 Facsimile: +61-2-8870-1111

YOKOGAWA INDIA LTD.

Plot No. 96. Electronic City Complex, Hosur Road, Bangalore 560100, INDIA Phone: +91-80-4158-6000 Facsimile: +91-80-2852-1442

YOKOGAWA SHANGHAI TRADING CO., LTD.

4F Tower D, Cartelo Crocodile Building, No.568 West Tianshan Road, Shanghai, CHINA

Phone: +86-21-6239-6363 Facsimile: +86-21-6880-4987

YOKOGAWA MIDDLE EAST B. S. C.(C)

P.O.BOX 10070, Manama, Building 577, Road 2516, Busaiteen 225, Muharraq, BAHRAIN Phone: +973-17-358100 Facsimile: +973-17-336100

YOKOGAWA ELECTRIC CIS LTD.

Grokholskiy per. 13, Build. 2, 4th Floor, 129090, Moscow RUSSIAN FEDERATION

Facsimile: +7-495-737-7869 Phone: +7-495-737-7868

Represented by:
