YOKOGAWA

AC Voltage Current Standard

2558A

AC Voltage Current Standard

Simple standalone solution for calibrating meters, clamps and CTs

Easy Operation

A dial for each function

High Accuracy

0.04% AC Voltage

0.05% AC Current

Wide Output Range

1.00 mV to 1200.0 V

1.00 mA to 60.00 A

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

1-Year Warranty CE

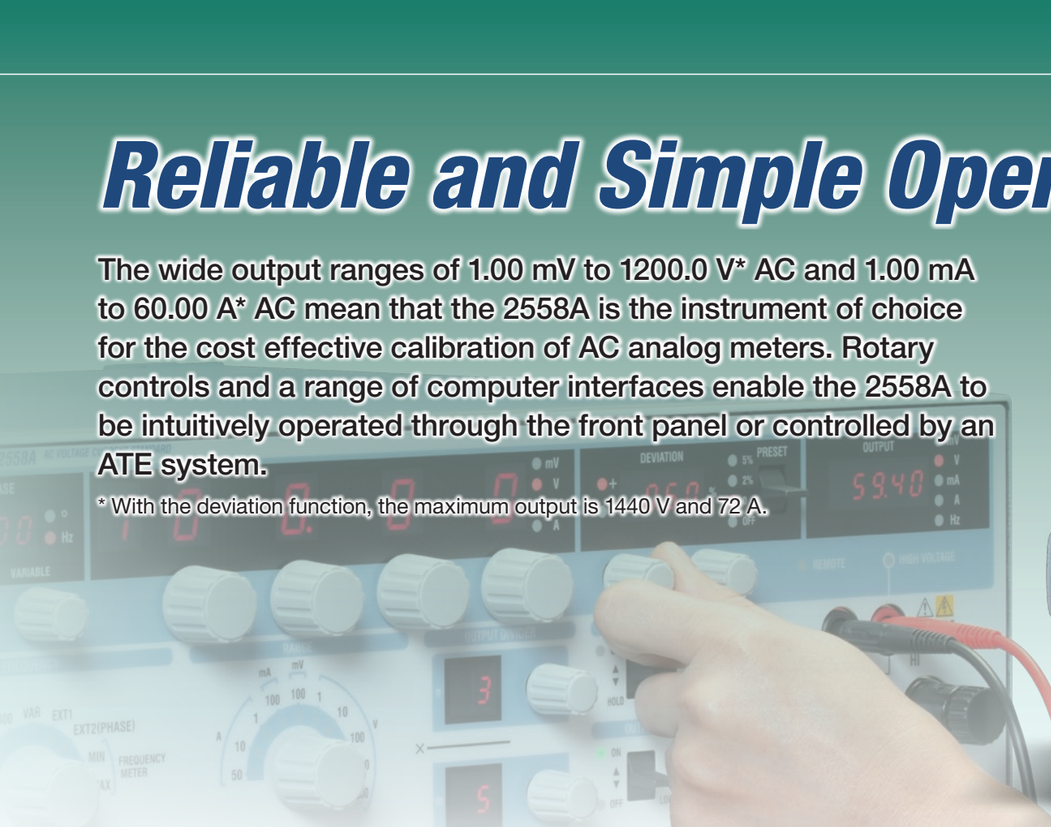
Bulletin 2558A-01EN

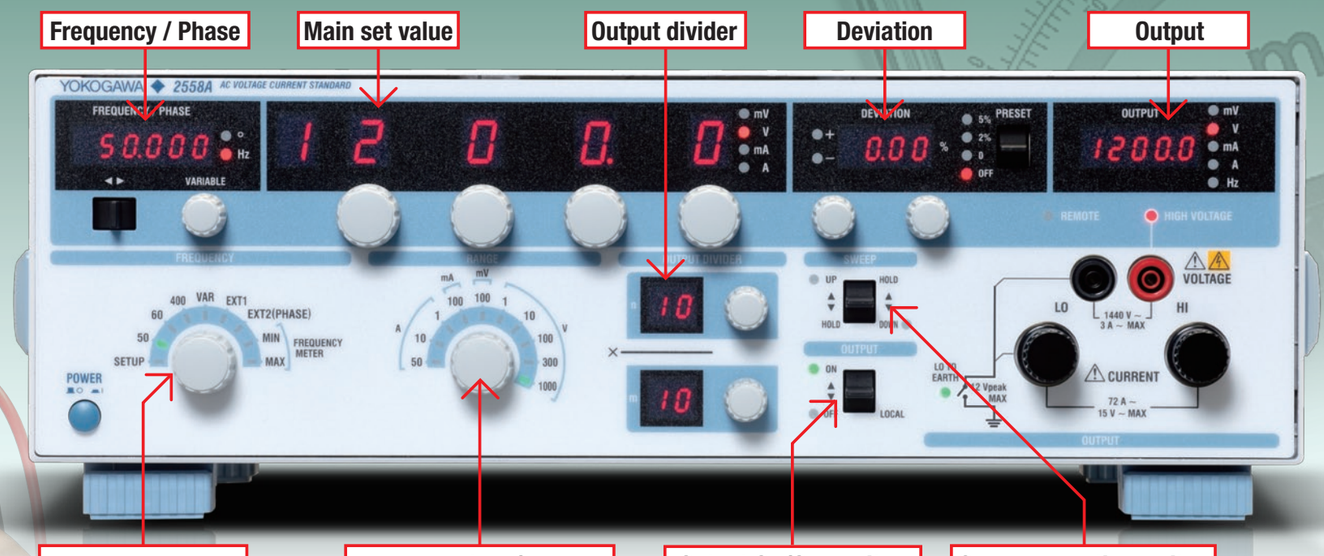
Reliable and Simple Operation

New AC Voltage Current Standard from "YOKOGAWA"

The wide output ranges of 1.00 mV to 1200.0 V* AC and 1.00 mA to 60.00 A* AC mean that the 2558A is the instrument of choice for the cost effective calibration of AC analog meters. Rotary controls and a range of computer interfaces enable the 2558A to be intuitively operated through the front panel or controlled by an ATE system.

* With the deviation function, the maximum output is 1440 V and 72 A.





Intuitive operation

Dials and switches are provided for each digit and function, and traditional 7-segment LEDs provide clear visibility.

Sweep (Voltage/Current/Frequency*)

With a flick of a switch, the output can be swept from 0% to 120% of the main set value with sweep times of 16, 32 or 64 seconds.

* The range of frequency sweep can be set.

Output Divider

Linearity tests can be simply performed by dividing the output into steps. For example, a setting of 4 will generate steps of 25, 50, 75 and 100% of the set output value.

Direct readout of the deviation

When the deviation dials are adjusted to check the full scale value on the meter, the deviation from the main output setting is displayed as a % of full scale.

Digital display of output

The actual output value is displayed. It is therefore unnecessary to calculate the output value from the main, divider and deviation settings.
You can confirm that the output is stable and how it corresponds to the target meter's reading.

Common current output terminals

The same output terminals are used for all current ranges. Test times are therefore reduced by avoiding the need to change the wiring for meters which have different ranges.

High accuracy

AC voltage : ±0.04 %
AC current : ±0.05 %

More than sufficient to calibrate meters with class 0.1% accuracy.

10 to 120 % of range			
	± (% of setting + % of range)		
	50/60 Hz	40 ≤ f ≤ 400 Hz	400 < f ≤ 1 kHz
AC voltage	0.03 + 0.01	0.05 + 0.01	0.10 + 0.02
AC current	0.04 + 0.01	0.06 + 0.01	0.12 + 0.02

1 to 10 % of range			
	± (% of range)		
	50/60 Hz	40 ≤ f ≤ 400 Hz	400 < f ≤ 1 kHz
AC voltage	0.013	0.015	0.03
AC current	0.014	0.016	0.032

High stability

AC voltage/current : ±50 ppm/h

± (20 ppm of range + 30 ppm of range)/h
Perform measurements with high repeatability over time

Wide output range

AC voltage : 1.00 mV to 1200.0 V
AC current : 1.00 mA to 60.00 A

6 voltage ranges (100 m/1/10/100/300/1000 ([V]))
4 current ranges (100 m/1/10/50 ([A]))

The generation range is 0 to 144 % of range

Ex. Set for the output

1. Select the range
2. Main setting : Available for 0 to 120 % of the range
3. Output divider : n & m (n/m of main set value)
   m = The number of required calibration points
   if the main set value = 100V, m = 5 and n = 1, the output will be 20 V
4. Deviation : Available for ± 20 % of the main setting

Max. output current is "72A" at the 50 A range

Main setting : 60 A
Output divider : n = m
Deviation : - 20%

Wide frequency range

40 to 1000 Hz
(Frequency accuracy : ±50 ppm)

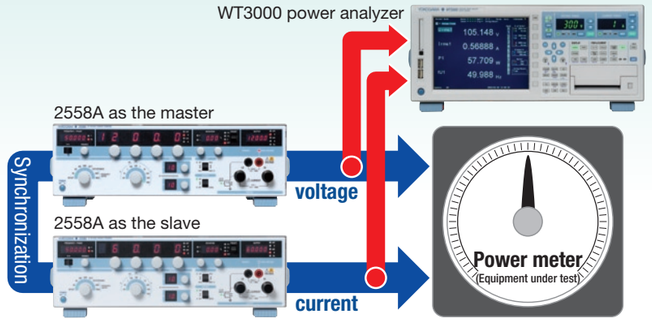
The 2558A provides fixed frequencies of 50/60 Hz (commercial) and 400 Hz (marine and aviation), as well as variable frequencies from 40 to 1000 Hz.
The high frequency accuracy of the 2558A (50 ppm) also enables it to be used to calibrate frequency meters.

Multiple 2558As can be synchronized using the internal phase shifter. This means that two 2558As can be used as accurate sources of voltage and current for calibrating power meters.

2558A
AC Voltage Current Standard

Power calibration

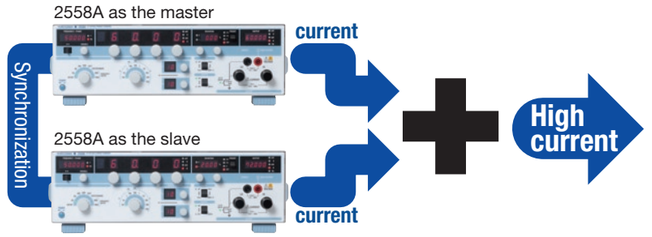
A power calibration system can be created by using two 2558As (one each for AC voltage and AC current) together with a Yokogawa WT3000 power analyzer as the reference.
One of the 2558As acts as the master unit and provides the synchronizing oscillator signal. The required power factor is set by adjusting the phase shifter on the slave unit and monitoring the result on the WT3000.
A 3 phase power calibrator system can be simply built by adding further 2558As.



Higher current output

To generate higher current than 72 A, two 2558As can be connected to double the output to 144 A.

Condition :
- Accuracy, stability, temperature coefficient is the sum of the individual units.
- 50/60 Hz only.



Use existing 2558 programs

The 2558A is backwardly compatible with the previous 2558 model. The new 2558A supports a 2558 command mode, which means that you can switch from the 2558 to the 2558A without modifying your program. It is also possible to mix 2558s and new 2558As in the same system.*

* Programs may need to be modified due to the improvement in the response time etc.

Calibration and test for meters

The 2558A provides specific functions to enable meters to be calibrated accurately and efficiently.

Using the output divider and deviation

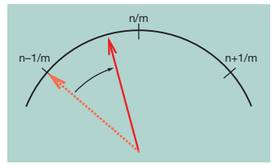
Calibrating two or more points is quick and simple.
It is only necessary to preselect the number of required calibration points with the lower divider control and then use the upper control to step the output to the next calibration point. The deviation settings will then enable the output value and error of each calibration point to be displayed directly.

Using the output divider and deviation preset

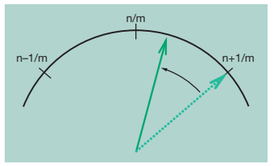
The deviation preset control can be used to move the output value in small increments (2 or 5% of the step between calibration points).
This means that it is possible to finely approach the target calibration point, either from a lower value or a higher one, without exceeding it. This is particularly useful when the friction (hysteresis) of the moving part needs to be taken into consideration. In this case the point is calibrated twice, once from a lower value and once more from a higher value and the final calibration result is the average of the two.

Using sweep

Needle sticking tests can be performed with high repeatability.
It is possible to stop at any point and sweep around it in fine detail.



From a lower value



From a higher value

SWEEP HOLD

SWEEP UP

SWEEP HOLD

Comparison with the 2558

		2558A	2558
AC Voltage	Output range of the specified accuracy	1.00 mV to 1200.0 V	1.00 mV to 1200.0 V
	Accuracy (50/60 Hz)	± 400 ppm	± 950 ppm
	Frequency of the specified accuracy	40 to 1000 Hz	50 / 60 / 400 Hz
AC Current	Output range of the specified accuracy	1.00 mA to 60.00 A	1.00 mA to 60.00 A
	Accuracy (50/60 Hz)	± 500 ppm	± 950 ppm
	Frequency of the specified accuracy	40 to 1000 Hz	50 / 60 / 400 Hz
Frequency	Output range	40 to 1000 Hz	40 to 500 Hz
	Accuracy	± 50 ppm	± 1%
Max. output		Approx. 36 VA (60 A/0.6 V)	Approx. 36 VA (60 A/0.6 V)
Stability		± (20 ppm of setting + 30 ppm of range)/h	± (0.03% of range)/h
Dimension (mm)		426 (W) × 132 (H) × 400 (D)	439 (W) × 149 (H) × 415 (D)

Rear Panel

1. GP-IB interface (optional, /C1)
2. Ethernet
3. USB interface (for PC connection)
4. Input terminals for synchronized operation
5. Output terminals for synchronized operation

Specification

Output

Range	Output range	Specified output range	Resolution	Maximum output
100 mV	0 to 144.00 mV	1 to 120.00 mV	10 uV	—
1 V	0 to 1.4400 V	0.01 to 1.2000 V	100 uV	0.5 A or more
10 V	0 to 14.400 V	0.1 to 12.000 V	1 mV	Approx. 3 A
100 V	0 to 144.00 V	1 to 120.00 V	10 mV	Approx. 0.3 A
300 V	0 to 432.0 V	3 to 360.0 V	100 mV	Approx. 0.1 A
1000 V	0 to 1440.0 V	10 to 1200.0 V	100 mV	Approx. 6 mA
100 mA	0 to 144.00 mA	1 to 120.00 mA	10 uA	Approx. 15 V
1 A	0 to 1.4400 A	0.01 to 1.2000 A	100 uA	Approx. 15 V
10 A	0 to 14.400 A	0.1 to 12.000 A	1 mA	Approx. 3 V
50 A	0 to 72.00 A	0.5 to 60.00 A	10 mA	Approx. 0.6 V

Condition Frequency : Internal oscillator
Temperature/Humidity : 23 ± 3 °C/20 to 80 %RH
Add the temp. coefficient at 5 to 20°C, 26 to 40°C

Accuracy

	Upper : 180 days Lower : 1 year					
	10% to 120% of range			1% to 10% of range		
	± (% of setting + % of range)			± (% of range)		
Range	50/60 Hz	40 Hz ≤ f ≤ 400 Hz	400 Hz < f ≤ 1 kHz	50/60 Hz	40 Hz ≤ f ≤ 400 Hz	400 Hz < f ≤ 1 kHz
100 mV 1 V 10 V 100 V 300 V 1000 V	0.03 + 0.01 0.04 + 0.01	0.05 + 0.01 0.06 + 0.01	0.10 + 0.02 0.11 + 0.02	0.013 0.014	0.015 0.016	0.030 0.031
100 mA 1 A 10 A 50 A	0.04 + 0.01 0.055 + 0.01	0.06 + 0.01 0.075 + 0.01	0.12 + 0.02 0.135 + 0.02	0.014 0.0155	0.016 0.0175	0.032 0.0335

Stability

± (20 ppm of setting + 30 ppm of range)
Condition Output : 1 to 120% of range
Frequency : Internal oscillator
Temperature/Humidity : 23±3°C / 20 to 80%RH
Time : 1 min. to 1 hour after output ON

Temperature Coefficient (5 to 20°C, 26 to 40°C)

50/60 Hz : ±(30 ppm of setting/°C)
Other : ±(50 ppm of setting/°C)

Distortion Factor

Voltage output : 0.07% or less
Current output : 0.18% or less
Condition Output : 40 to 120% of range
Load : Resistance only
20% of the max. output or less
(Current at the voltage output,
or voltage at the current output)
Frequency : 40 to 1000 Hz

Specification

AC Voltage Current Standard **2558A**

Frequency range

Accuracy (internal) : ± 50 ppm (180 days)
± 100 ppm (1 year)
Mode : Internal / External / FREQUENCY METER
Internal : 50 / 60 / 400 Hz
VAR (40 to 1000 Hz, 0.001 Hz resolution)
External : EXT1 / EXT2
(Use the terminals for the synchronized operation)
FREQUENCY METER : MIN/MAX
Range : 20 to 1000 Hz
Resolution : 0.001 Hz
Sweep, output divider and deviation functions are used for the frequency.

Sweep

Target : Voltage / Current / Frequency
Speed : Approx. 16/32/64 sec. selectable
During 0 to 100%, 100 to 0% of setting

Output divider

Target : Voltage / Current / Frequency
Denominator : m 4 to 15
Numerator : n 0 to 15 (n ≤ m)

Deviation

Target : Voltage / Current / Frequency
Variable range : ±20.00%
Operation : Two dials
Resolution of the first dial : 0.2% of the main setting
Resolution of the second dial : 0.01% of the main setting
Deviation preset : OFF / 0 / 2% / 5%

Output terminal

Type Voltage : Plug-in terminal (safety terminal)
Current : Large binding post
Selectable LO terminal to earth or floating.
Max. floating voltage to earth : 12 Vpk

Display

Main setting : 5 digits LED
Output Divider : 2 digits LED (m and n)
Deviation : 4 digits LED
Output : 5 digits LED
Frequency/Phase : 6 digits LED

SETUP

Setting : Communication, Beep sound,Sweep speed, Earth/Floating
Status : Self test, Error log, Product Information

External I/O

Sync. Terminals (two input terminals and two output terminals)
I/O voltage : 3±0.1 Vrms, 2 phase sine wave
Frequency : 40 to 1000 Hz
Input resistance : Approx. 1 MΩ
Output resistance : Approx. 50 Ω

USB PC interface (for PC connection)

Connector : Type B connector (receptacle)
Electrical and mechanical specifications : Complies with USB Rev. 2.0
Supported transfer modes : High Speed, Full Speed

Ethernet interface

Connector : RJ-45 connector
Electrical and mechanical specifications : Confirms to the IEEE 802.3
Transmission methods : 100 BASE-TX / 10 BASE-T

GP-IB interface (/C1 optional)

Electrical and mechanical specifications
: Complies with IEEE St'd 488-1978
Functional specifications : SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0
Address : 0 to 30

General specifications

Warm-up time : Approx. 30 minutes
Operating environment : Temperature : 5 to 40°C
: Humidity : 20 to 80%RH (no condensation)
: Attitude 2000 m or less
Installation locations : Indoors
Storage environment : Temperature -15 to 60°C
: Humidity 20 to 80%RH (no condensation)
Rated power supply voltage : 100 to 120 VAC / 200 to 240 VAC
Allowable power supply voltage fluctuation range : 90 to 132 VAC / 180 to 264VAC
Rated power supply frequency : 50/60 Hz
Allowable power supply frequency fluctuation range : 48 to 63 Hz
Max. power consumption : 200 VA
Weight : Approx. 20 kg
Dimensions : 426(W) x 132(H) x 400(D) mm

Accessories

758933 Measurement lead set
2 pieces (red and black) in 1 set,
length: 1.00 m Used in combination with the 701959, 758921, 758922, or 758929.
Rating: 1000 V CAT III/19 A

B8506WA Measurement lead set
2 pieces (red and black) in 1 set,
length : 1.5 m, Rating : 80 A

758917 Measurement lead set
2 pieces (red and black) in 1 set,
length: 0.75 m Used in combination with the 701959, 758921, 758922, or 758929.
Rating: 1000 V CAT II/32 A

758922 Small Alligator clip adapter set
Safety terminal (banana female)-to-alligator clip adapter 2 pieces (red and black) in 1 set Rating: 300 V CAT II Connected to the 758933, 758917, or 701901.

758929 Large Alligator clip adapter set
Safety terminal (banana female)-to-alligator clip adapter 2 pieces (red and black) in 1 set Rating: 1000 V CAT II Connected to the 758933, 758917, or 701901.

758921 Fork terminal adapter set
Two adapters (red and black) to a set. Used when attaching banana plug to binding post.

701902 / 701903 Safety BNC-BNC cable
701902: Length 1 m, 1000 V CAT II
701903: Length 2 m, 1000 V CAT II

758923 Safety terminal adapter set
Spring-hold type (banana male) 2 pieces in 1 set. Easy attachment/detachment of the cable. *

758931 Safety terminal adapter set
Screw-fastened type (banana male)
2 pieces in 1 set. Comes with a B9317WD 1.5 mm hexagonal wrench for fixing the cable in place. *

* Wire diameter of cables that can connect to the adapter
758923 Core wire diameter: 2.5 mm or less, insulation diameter: 5.0 mm or less
758931 Core wire diameter: 1.8 mm or less, insulation diameter: 3.9 mm or less

Due to the nature of the product, it is possible for the user to come in contact with metal parts and receive electric shock. Exercise caution when using the product.

AC Voltage Current Standard 2558A

Model and Suffix Codes

Model	Suffix code	Description
2558A		AC Voltage Current Standard
Power code	-D	UL/CSA standard, PSE
	-F	VDE standard
	-R	AS standard
	-Q	BS standard
	-H	GB standard
	-N	NBR standard
Option	/C1	GP-IB interface

Standard Accessories

Part name	Quantity
Power code	1
Measurement lead set (758933)	1 set (red and black)
Measurement lead set (B8506WA)	1 set (red and black)
Large alligator clip adapter set (758929)	1 set (red and black)
Rubber leg cap	1 set (2)
User's manual	1 set

Rack Mount Kits

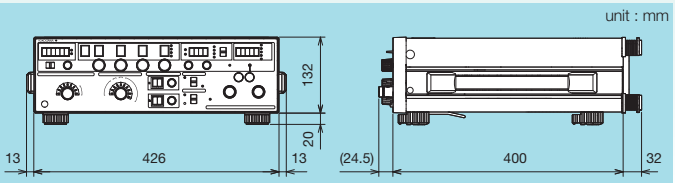
Model	Suffix code	Description
751535-E3	Rack mount kit	For EIA
751535-J3	Rack mount kit	For JIS

Optional Accessories

Model	Part name	Description
758933	Measurement lead set	1 m, 2 leads in a set
B8506WA	Measurement lead set	1.5 m, 2 leads in a set
758917	Measurement lead set	75 cm, 2 leads in a set
758922	Alligator clip adapter set	Rating 300 V, 2 adapters in a set
758929	Alligator clip adapter set	Rating 1000 V, 2 adapters in a set
758921	Fork terminal adapter set	Banana-fork adapter, 2 adapters in a set
701902	Safety BNC-BNC cable	1.0 m
701903	Safety BNC-BNC cable	2.0 m
758923	Safety terminal adapter set	Spring-hold type, 2 adapters in a set
758931	Safety terminal adapter set	Screw-fastened type, 2 adapters in a set

External dimensions

unit : mm



Related Product

WT3000

Precision Power Analyzer

High Accuracy

Basic Power Accuracy
±(0.02% of reading + 0.04% of range)

Low Power Factor Error

Power factor influence when cosø=0
0.03% of S
S is reading value of apparent power
ø is phase angle between voltage and current

Current Range

Direct Input
0.5/1/2/5/10/20/30 [A] *
or
5m/10m/20m/50m/100m/200m/500m/1/2 [A] *

External Input
50m/100m/200m/500m/1/2/5/10 [V] *

Voltage Range

15/30/60/100/150/300/600/1000 [V] *

* Voltage range and current range are for crest factor 3

Model	Description
760301	WT3000 1 input element model
760302	WT3000 2 input elements model
760303	WT3000 3 input elements model
760304	WT3000 4 input elements model

Yokogawa's Approach to Preserving the Global Environment

- Yokogawa's electrical products are developed and produced in facilities that have received ISO14001 approval.
- In order to protect the global environment,Yokogawa's electrical products are designed in accordance with Yokogawa's Environmentally Friendly Product Design Guidelines and Product Design Assessment Criteria.

YOKOGAWA
Yokogawa Meters & Instruments Corporation

NOTE
"Before operating the product, read the user's manual thoroughly for proper and safe operation."

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 ELECTRIC KOREA CO., LTD.
C&M Sales Seoul Office
1301-1305, 13rd floor, Kolon digital tower, 106-1, Yangpyongdong-5Ga, Yeongdeungpo-Gu, Seoul, 150-105, Korea
Phone: +82-2-2628-3810 Facsimile: +82-2-2628-3899

YOKOGAWA AUSTRALIA PTY. LTD.
Tower A/112-118 Talavera Road Macquarie Park, NSW 2113 Australia
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
Phone: +7-495-737-7868 Facsimile: +7-495-737-7869

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