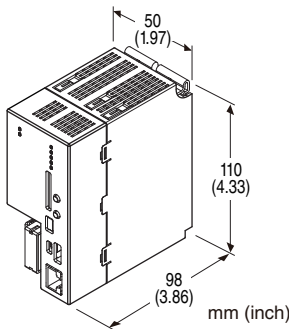


Paperless Recorder TR30 Series

PAPERLESS RECORDER

Functions & Features

- By using SD card, measurement data and running / stopping status of device can be recorded.
 - 'Browsing' function with browser.
 - To use combination with R30 series I/O module.
- Flexible selection and combination are available depending on required signal type and points.



MODEL: TR30-G-R

ORDERING INFORMATION

- Code number: TR30-G-R

MODULE TYPE

G: High functionality

POWER INPUT

DC power

R: 24 V DC

(Operational voltage range: $\pm 10\%$; ripple 10 %p-p max.)

FUNCTIONS & FEATURES

TR30 is used in combination with base (model: R30BS) and I/O module (Remote I/O R30 series)

■ TR30

Collecting of input data, recording and transmitting output data:

Collecting data from I/O module via internal bus, recording to internal memory and recording to SD card.

Connecting between remote I/O and Modbus/TCP and collecting and recording input data of remote I/O.

Sending alarm output to output module by setting alarm level.

- Web server:

TR30 works as a web server, showing collected data to the

browser of a tablet. Various setting and operation are available.

- Internal power

Internal power required for TR30 and I/O module is generated from supplied power.

■ I/O Module

Performing D/A conversion of data received through the internal bus into discrete outputs; A/D conversion of field analog/discrete inputs. (Refer to the specification of each R30 I/O module)

■ Installation base

The base for installation of modules incorporating PWB for internal power and internal bus. (Refer to the specification of installation base (model: R30BS))

RELATED PRODUCTS

- Remote I/O R30 series
 - PC Configurator cable
USB 2.0 compatible cable
(TR30 connector: mini-B type, 5.0m max.)
 - PC configurator software (model: TRGCFG)
 - PC configurator software (model: R30CFG)
 - Viewer software (model: TRViewer)
- Software downloadable at M-System's web site.
- SD card

A SD card is required to store data in the unit.

Use the specified model number of memory card.

Available for purchase from M-System. Consult M-System.

- Hagiwara Solutions NSD6-004GH, NSD6-016GH

GENERAL SPECIFICATIONS

Connection

RUN contact output, power supply: M3 separable screw terminal (torque 0.5 N·m)

Ethernet: RJ-45 modular jack

Internal bus: Via the Installation Base (model: R30BS)

Internal power supply: Via the Installation Base (model: R30BS)

Solderless terminal: Refer to the Applicable Solderless Terminal Size drawing.

Recommended manufacturer: Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,Ltd

(Ones with insulation sleeve do not fit.)

Applicable wire size: 0.25 – 0.75 mm²

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (gray)

Max. number of R30 I/O modules: 8

(Max. consumption current of I/O modules: 500 mA)

Isolation: Ethernet to internal bus or internal power to RUN contact output to power supply to FE

Calendar clock: Year (4 digits), month, date, day, hour,

minute, second

Read rate: Approx. ≤ 1 msec. (Connected max. modules)

Indicator LEDs: PWR, TR30 RUN, RECORD, SD CARD, ERROR
(Refer to the instruction manual)

RUN contact output: Turns on (closed) at normal operation

■ RUN CONTACT OUTPUT

Rated load: 250 V AC @ 0.5 A ($\cos \phi = 1$)

30 V DC @ 0.5 A (resistive load)

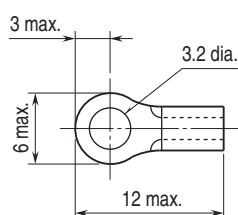
Maximum switching voltage: 250 V AC or 30 V DC

Maximum switching power: 250 VA or 30 W

Minimum load: 5 V DC @ 10 mA

Mechanical life: 2×10^7 cycles (rate 300 cycles/min.) When driving an inductive load, external contact protection and noise quenching recommended.

■ Recommended solderless terminal size - M3 (unit: mm)



R30 CONNECTION

■ TR30 INSTALL POSITION

Install to PWR slot (most left slot) and COM slot (right next to PWR slot).

■ COMPATIBLE R30 SERIES MODULES

TYPE	MODEL
Base	R30BS
Discrete input	R30XN16A
Discrete output	R30YN16A, R30YN16C
DC voltage/current input	R30SV2, R30SV4
Thermocouple input	R30TS4
RTD input	R30RS4
Potentiometer input	R30MS4
Universal input	R30US2, R30US4

ETHERNET COMMUNICATION

Communication Standard: IEEE 802.3u

Transmission: 10BASE-T, 100BASE-TX

Baud rate: 10/100 Mbps (Auto Negotiation function)

Protocol: TCP/IP, Modbus/TCP, HTTP, FTP, SMTP, SNMP

Transmission media: 10BASE-T (STP, Category 5) 100BASE-TX (STP, Category 5e)

Ethernet indicator LED: DPX, LNK

IP address: 192.168.0.1 (factory setting)

INSTALLATION

Power consumption

•DC: Approx. 18 W 24 V DC (@ output current max. 500 mA)

Internal power

• Max. rated output voltage / current: 21 V DC / 500 mA

Total current consumed at the R30 I/O modules used combination with TR30 must be within above current.

Operating temperature: 0 to 50°C (32 to 122°F)

Storage temperature: -10 to +60°C (14 to +140°F)

Operating humidity: 10 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Installation Base (model: R30BS)

Weight: 300 g (0.66 lb)

PERFORMANCE

Calendar clock: (with battery backup)

Accuracy: Monthly deviation 2 minutes at 25°C

Back up period: Approx. 2 years at 25°C

Battery: Primary lithium battery (non-removable)

(In order to prevent battery drain, battery back up is OFF at factory default. Turn it ON prior to start using.)

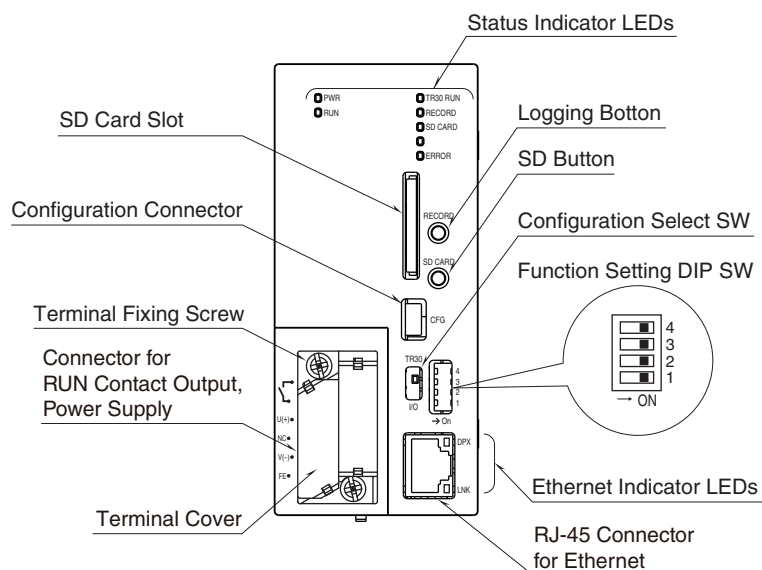
Insulation resistance: ≥ 100 M Ω with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute

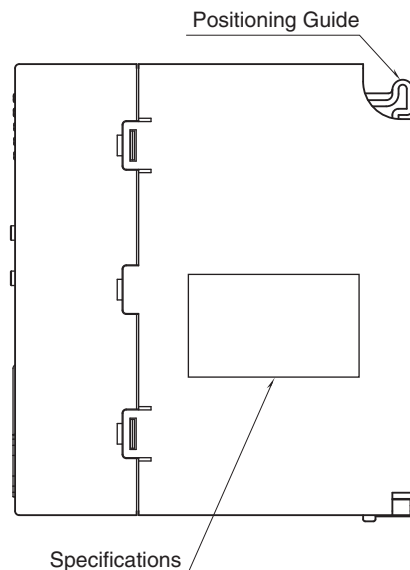
(Ethernet to internal bus or internal power to RUN output to power input to FE)

EXTERNAL VIEW

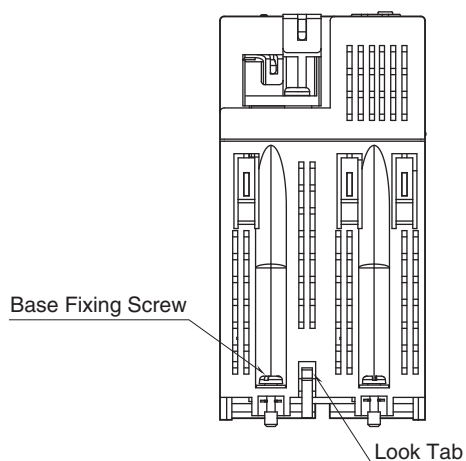
■ FRONT VIEW



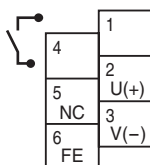
■ SIDE VIEW



■ BOTTOM VIEW

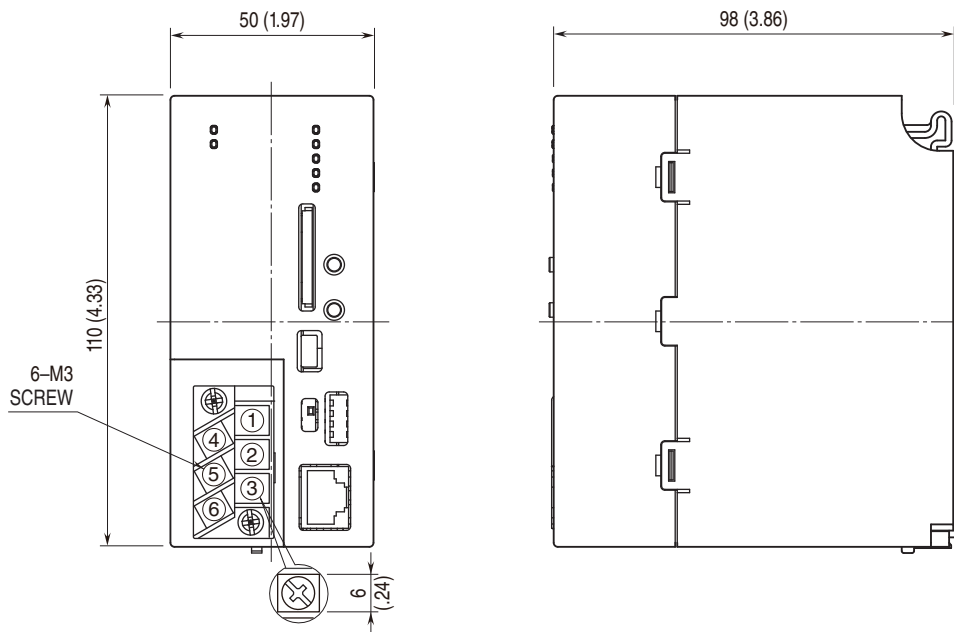


TERMINAL ASSIGNMENTS

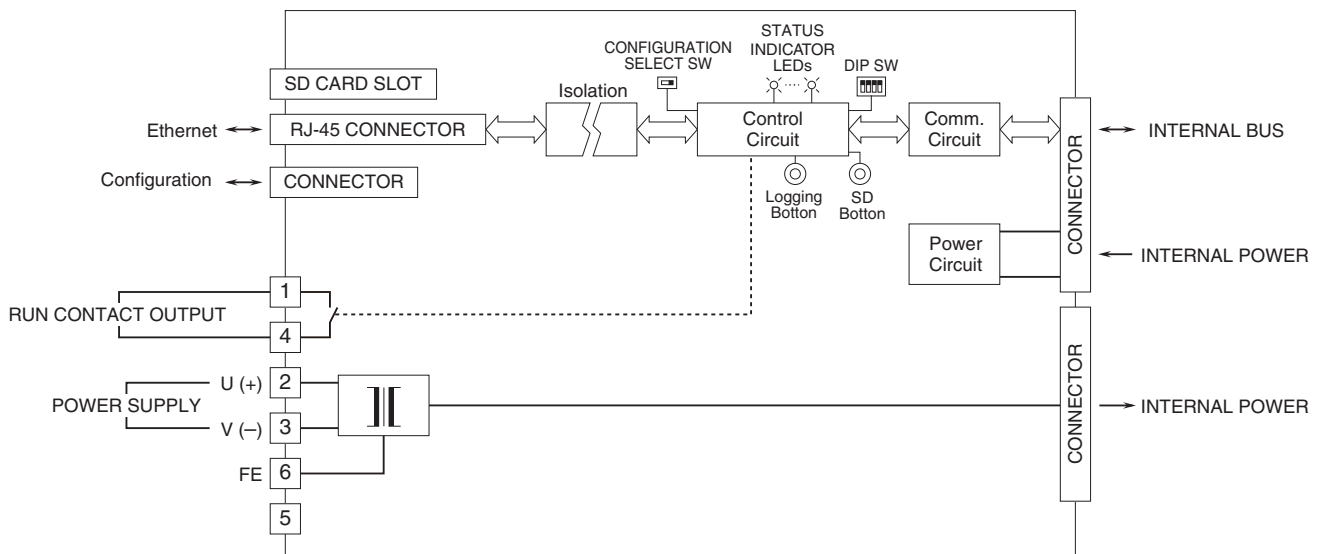


NO.	ID	FUNCTION
1	RUN contact output	RUN contact output
2	U (+)	Power supply (24 V DC)
3	V (-)	Power supply (0 V DC)
4	RUN contact output	RUN contact output
5	NC	Not used
6	FE	Functional earth

EXTERNAL DIMENSIONS unit: mm (inch)



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



DATA STORING

The trend data, event data and comment data are transferred into the internal memory with specified logging rate. It is available to transfer into the SD card with the timing according to the logging rate.

■ Event data

- Event: Transition of analog input zone, transition of pulse input zone, status change of discrete input

- Event detection interval: Same as trend data sampling rate
- Stored contents: Date/time, event
- Number of event: 3000

■ Comment data

- Number of characters for comment: 32
- Stored contents: Date/time, comment.

- Number of comment: 1000

■ Trend data

- Channel: Max. 120 points (Choose among followings: analog input (AI), discrete input (DI), pulse input (PI), function input (OI), discrete output (DO))
- Number of records: 50

LOGGING RATE	SAMPLING RATE	PEN	AI	DI	PI	OI	DO
5 ms	5 ms	16	16	32	16	16	32
10 ms	5 ms	16	16	32	16	16	32
50 ms	5 ms	16	16	32	16	16	32
100 ms	100 ms	32	32	64	32	32	64
500 ms	100 ms	32	32	64	32	32	64
1 sec.	100 ms	32	32	64	32	32	64
2 sec.	1 sec.	32	32	64	32	32	64
5 sec.	1 sec.	32	32	64	32	32	64
10 sec.	1 sec.	32	32	64	32	32	64
1 min.	1 sec.	120	64	64	32	32	64
2 min.	1 sec.	120	64	64	32	32	64
5 min.	1 sec.	120	64	64	32	32	64
10 min.	1 sec.	120	64	64	32	32	64
30 min.	1 sec.	120	64	64	32	32	64
1 hour	1 sec.	120	64	64	32	32	64

■ SD card

- Recording contents: Trend data, event data, comment data, settings information
- Transfer rate

LOGGING RATE	TRANSFER RATE
5 ms	3 min.
10 ms	5 min.
50 ms	10 min., 30 min.
100 ms	10 min., 30 min., 1 hour
500 ms	30 min., 1 hour, 6 hours
1 sec.	1 hour, 6 hours, 12 hours
2 sec.	1 hour, 6 hours, 1 day
5 sec.	6 hours, 12 hours, 1 day
10 sec.	6 hours, 12 hours, 1 day
1 min.	1 day, 1 week
2 min.	1 day, 1 week
5 min.	1 day, 1 week, 1 month
10 min.	1 day, 1 week, 1 month
30 min.	1 day, 1 week, 1 month
1 hour	1 week, 1 month

Note. Defining no specification of interval (50000 points) is available for all storing rate.

• Data format

Trend data, event data and comment data are saved with dedicated format (binary, extension "TRD") or CSV format. Setting information is saved into text format (xml format, extension "xml"). CSV format can be selected with storing rate 100 ms or longer.

• Data file name

File name is created with YYMMDDHHMMSS and daylight saving time (S or D) in the beginning of sample.
(e.g. 20140212100000S.TRD)

• Viewer Software

The data transferred to SD card can be displayed with using dedicated Viewer Software (model: TRViewer). Also, converting to CSV format file is available.

• Auto file delete

When auto file delete is disabled, it is available to store until there is no remaining space in the SD card. When auto file delete is enabled and the remaining space in the SD card reaches 100MB, the data is deleted from oldest.

• Storable time duration

(rough guide for 4GB SD card "TRD")

STORING RATE	16 pens	32 pens	64 pens	120 pens
5 ms	3 days			
10 ms	6 days			
50 ms	25 days			
100 ms	50 days	30 days		
500 ms	8 months	4 months		
1 sec.	1 year	9 months		
2 sec.	2 years	1 year		
5 sec.	7 years	4 years		
10 sec.	10 years	7.5 years		
1 min. – 1 hour	10 years (max. 10 years)			

Note. When only trend logging is enabled.

• Storable time duration

(rough guide for 4GB SD card "CSV")

STORING RATE	16 pens	32 pens	64 pens	120 pens
100 ms	28 days	15 days		
500 ms	4 months	78 days		
1 sec.	9 months	5 months		
2 sec.	1.5 years	10 months		
5 sec.	3.5 years	2 years		
10 sec.	7 years	4 years		
1 min. – 1 hour	10 years (max. 10 years)			

Note. When only trend logging is enabled.

COMMUNICATION

■ IP

DHCP client is supported. Manual setting of IP address, subnet mask, default gateway and DNS server available too.

■ Web server function

This unit can be a Web server, and 'Data,' 'Trend' and 'Event Log' view are available from remote location.

Compatible terminal, browser

- iPad (iOS 8.4): Safari
- Android tablet (Android 4.0): Chrome 37.0.2062.117
- Windows PC (Windows 7, 8.1), Tablet (Windows 8.1): Internet Explore 11, Firefox 37.0.2

Chrome 44.0.2403.107m

■ Modbus/TCP master

I/O expansion with remote I/O, e.g. R3 or R7 series, is available. Measuring points in multiple location can be handled collectively.

■ Connectable devices

- R3-NE1
- R5-NE1
- R6-NE1, R6-NE2
- R7E series
- R9EWTU
- 72EM2-M4
- DL8 series
- TR3EX

■ Max. number of connectable devices

- 12 (nodes)

■ Max. I/O points

- Analog input: 64 points
- Discrete input: 64 points
- Pulse input: 32 points
- Discrete output: 64 points

■ Modbus/TCP slave

Remote monitor with SCADA is available. Recording start/stop, entering comment, specifying folder/file name for SD card transfer destination and setting folder name for ftp transfer destination are available with PLC.

ALARM OUTPUT

Event can trigger an alarm contact at a discrete output module.

EVENT REPORTING E-MAIL

Reporting e-mail function available at event or designated time.

Encrypted communication is supported. (SMTP over SSL).

The TR30 turns a designated Do ON after transmitting the report.

- Number of e-mail attention: 32
- Number of event report text: 32
- Number of regular report text: 1
- Channel status: AI, DI, PI, DO status attachable to e-mail
- Output at transmitting failure: 1 point

FTP CLIENT

It is available to upload the file saved in the SD card to FTP server.

LOGGING RATE	TRANSFER RATE
5 ms	3 min.
10 ms	5 min.
50 ms	10 min., 30 min.
100 ms	10 min., 30 min., 1 hour
500 ms	30 min., 1 hour, 6 hours
1 sec.	1 hour, 6 hours, 12 hours
2 sec.	1 hour, 6 hours, 1 day
5 sec.	6 hours, 12 hours, 1 day
10 sec.	6 hours, 12 hours, 1 day
1 min.	1 day, 1 week
2 min.	1 day, 1 week
5 min.	1 day, 1 week, 1 month
10 min.	1 day, 1 week, 1 month
30 min.	1 day, 1 week, 1 month
1 hour	1 week, 1 month

Note. If interval is maximum, the data is transferred at the time when 50000 points is stored.

FTP SERVER

Reading and deleting files in the SD card by an FTP client is available.

Operation verified FTP client

- Explorer
- Web browser

Internet Explorer version 11

Firefox version 37.0.2 or later

Chrome 44.0.2403.107m

- FFFTP 1.98g

ARITHMETIC FUNCTION

Addition and subtraction, multiplication, division, square root, moving average, delay buffer, exp, common logarithm, natural logarithm, peak hold(max/min), analog accumulation, power and F value calculation are available with function input (OI).

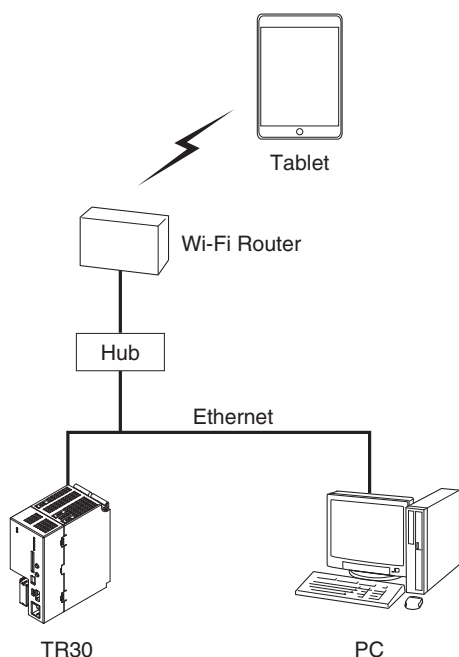
OTHER FUNCTIONS

Configuration: Configurable with the dedicated software model: TRGCFG

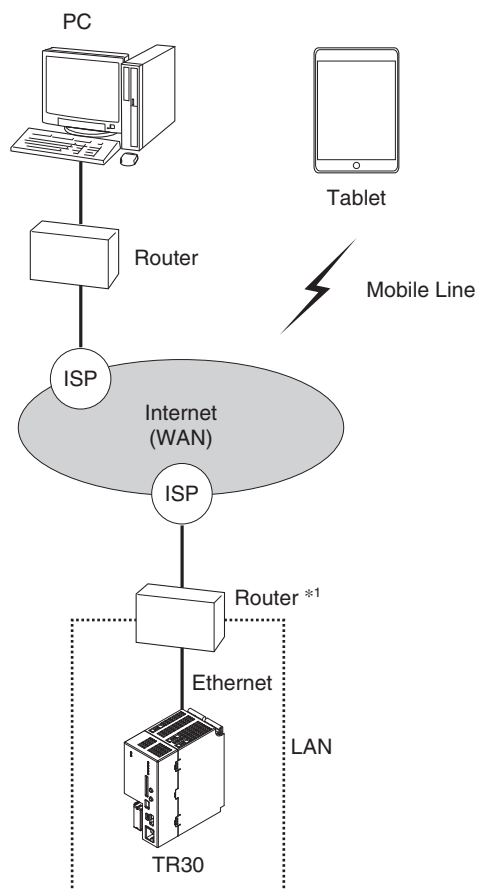
SYSTEM CONFIGURATION EXAMPLES

Devices other than the TR30 in below provided by the user.

■ VIA LOCAL NETWORK (LAN)

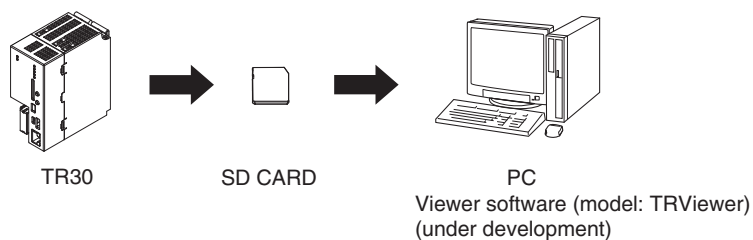


■ VIA INTERNET (WAN)



*1. D.DNS service or static IP address is required.

■ STAND-ALONE



Specifications are subject to change without notice.