

# *TOSVERT VF-AS3*

## Calendar function Manual

**TOSHIBA INDUSTRIAL PRODUCTS AND SYSTEMS CORPORATION**

NOTICE

1. Read this manual before installing or operating the inverter. Keep it in a safe place for reference.
2. All information contained in this manual will be changed without notice.



## ■ Function

The inverter has RTC (Real Time Clock) inside.

The inverter has the calendar (work day, holiday...) which can be set by parameters.

Output terminal signal is ON at the day of the week, hour and minute set as "work day-time" by parameters.

The output terminal signal can be used as machine operation, pattern operation in the inverter, my function in the inverter.

1. Current time (year; month, date; hour, minute) can be set by parameters.
2. Time zone and daylight saving time can be set by parameters.
3. 4 work days can be set. (4 work-day, time for start; 3 work-time for end; 1 work-day, time for end.) Even if the start and end are different day, they can be set.
4. Moreover, 20 holidays can be set by parameters (10 for month, date; 10 for week number, day of the week setting)  
Week number and day of the week setting are defined as ISO 8601. You can also set consecutive holidays.

## ■ Parameter setting

Title	Parameter name	Adjustment range	Default setting
A001	Time setting (Year)	0: No change 1 – 2015: do not set 2016 – 2099: Year	0
A002	Time setting (Month, Date)	0.00: No change 1.01 – 12.31 (Month. Date) Note) Do not set "non-exist" month, date as 0.01 or 6.42.	0.00
A003	Time setting (Hour, Minute )	0.00: No change 0.01 – 23.59 (Hour. Minute) Note) Do not set xx.60 – xx.99, these are "non-exist".	0.00
A004	Time setting trigger	0: - 1: Trigger to set (0 after execution)	0
A005	Time zone (UTC+/-) (Hour, Minute )	-12.00 to +14.00 (Hour. Minute)	0.00
A006	Daylight saving time start (Month, Week, Day of the week)	0.xx: No daylight saving time 1.11 – 12.67 (Month. Week, Day of the week) Month: 1.xx=Jan. – 12.xx = Dec. Week: xx.1x=1 <sup>st</sup> week (1 <sup>st</sup> to 7 <sup>th</sup> ) xx.2x=2 <sup>nd</sup> week (8 <sup>th</sup> to 14 <sup>th</sup> ) xx.3x=3 <sup>rd</sup> week (15 <sup>th</sup> to 21 <sup>st</sup> ) xx.4x=4 <sup>th</sup> week (22 <sup>nd</sup> to 28 <sup>th</sup> ) xx.5x=5 <sup>th</sup> week (after 29 <sup>th</sup> ) xx.6x=final week (last day – 6 to last day) Day of the week: xx.x1=Monday – xx.x7=Sunday	0.17

Title	Parameter name	Adjustment range	Default setting
A007	Daylight saving time end (Month, Week, Day of the week)	1.11 – 12.67 (month. week weekday) Month: 1.xx=Jan. – 12.xx=Dec. Week: xx.1x=1 <sup>st</sup> week (1 <sup>st</sup> to 7 <sup>th</sup> ) xx.2x=2 <sup>nd</sup> week (8 <sup>th</sup> to 14 <sup>th</sup> ) xx.3x=3 <sup>rd</sup> week (15 <sup>th</sup> to 21 <sup>st</sup> ) xx.4x=4 <sup>th</sup> week (22 <sup>nd</sup> to 28 <sup>th</sup> ) xx.5x=5 <sup>th</sup> week (after 29 <sup>th</sup> ) xx.6x=final week (last day – 6 to last day) Day of the week: xx.x1=Monday – xx.x7=Sunday	1.17
A008	Daylight saving time start Hour, end Hour	0.00 – 23.23 (Hour of start. Hour of end)	2.02
A020	Calendar 1 Day of week setting	0: Disabled +1: Every Monday +2: Every Tuesday +4: Every Wednesday +8: Every Thursday +16: Every Friday +32: Every Saturday +64: Every Sunday +128: Only one time (0 after execution)	0
A021	Calendar 1 start (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A022	Calendar 1 end (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A023	Calendar 2 Day of week setting	Same as A020	0
A024	Calendar 2 start (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A025	Calendar 2 end (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A026	Calendar 3 Day of week setting	Same as A020	0
A027	Calendar 3 start (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A028	Calendar 3 end (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A029	Calendar 4 Day of week setting	0.00: Disabled 1.xx=Only one time (0 after execution) Start (x.1x=Monday – x.7x=Sunday) End (x.x1=Monday – x.x7=Sunday )	0.00
A030	Calendar 4 start (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A031	Calendar 4 end (Hour, Minute)	0.00 – 23.59 (Hour. Minute)	0.00
A040	Holiday setting 1 enabled (Month, Date)	0: Disabled +1: Holiday setting 1 +2: Holiday setting 2 +4: Holiday setting 3 +8: Holiday setting 4 +16: Holiday setting 5 +32: Holiday setting 6 +64: Holiday setting 7 +128: Holiday setting 8 +256: Holiday setting 9 +512: Holiday setting 10	0
A041	Holiday setting 1 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A042	Holiday setting 2 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A043	Holiday setting 3 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01

Title	Parameter name	Adjustment range	Default setting
A044	Holiday setting 4 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A045	Holiday setting 5 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A046	Holiday setting 6 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A047	Holiday setting 7 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A048	Holiday setting 8 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A049	Holiday setting 9 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A050	Holiday setting 10 (Month, Date)	1.01 – 12.31 (Month. Date)	1.01
A060	Holiday setting 2 enabled (Week, Day of the week)	0: Disabled +1: Holiday setting 21 +2: Holiday setting 22 +4: Holiday setting 23 +8: Holiday setting 24 +16: Holiday setting 25 +32: Holiday setting 26 +64: Holiday setting 27 +128: Holiday setting 28 +256: Holiday setting 29 +512: Holiday setting 30	0
A061	Holiday setting 21 (Week, Day of the week)	0.11 – 53.77, Week: 0.xx – 53.xx Day of the week of holiday start: xx.1x – xx.7x Day of the week of holiday end: xx.x1 – xx.x7 (1=Monday – 7=Sunday ) The value of "Day of the week of holiday start" must not beyond the value of "Day of the week of holiday end".	1.11
A062	Holiday setting 22 (Week, Day of the week)	Same as A061	1.11
A063	Holiday setting 23 (Week, Day of the week)	Same as A061	1.11
A064	Holiday setting 24 (Week, Day of the week)	Same as A061	1.11
A065	Holiday setting 25 (Week, Day of the week)	Same as A061	1.11
A066	Holiday setting 26 (Week, Day of the week)	Same as A061	1.11
A067	Holiday setting 27 (Week, Day of the week)	Same as A061	1.11
A068	Holiday setting 28 (Week, Day of the week)	Same as A061	1.11
A069	Holiday setting 29 (Week, Day of the week)	Same as A061	1.11
A070	Holiday setting 30 (Week, Day of the week)	Same as A061	1.11

## ■ Set the current time

Set the current time as below.

### 1) Set time zone

First, set time zone by [A005]. Time zone means the time difference from UTC (Universal Time Coordinated).

### 2) Set daylight saving time

Next, set daylight saving time by [A006] to [A008].

Set start month, week number of month, day of the week of daylight saving to [A006], set end month, week number of month, day of the week of daylight saving to [A007]. Set start and end time of daylight saving to [A008].

During daylight saving period, time is 1hour earlier than usual. (time difference is 1 hour smaller than usual.)

Generally, daylight saving period starts and ends midnight of Sunday.

For example, the daylight saving period for EU starts from A.M. 1:00 final Sunday of March, and ends to A.M. 1:00 final Sunday of October. In this case it can be set [A006]="3.67", [A007]="10.67", [A008]="1.01".

[A006]	=	3.	6	7	[A007]	=	10.	6	7
Start DL saving		Mar.	final week	Sunday	End DL saving		Oct.	final week	Sunday
[A008]	=	1.	01						
DL saving time		start time	end time						

For example, the daylight saving period for North America starts from A.M. 2:00 2nd Sunday of March, and ends to A.M. 2:00 1st Sunday of November. In this case it can be set [A006]="3.27", [A007]="11.17", [A008]="2.02".

[A006]	=	3.	2	7	[A007]	=	11.	1	7
Start DL saving		Mar.	2nd week	Sunday	End DL saving		Nov.	1st week	Sunday
[A008]	=	2.	02						
DL saving time		start time	end time						

Note1) Generally, "the start of daylight saving month < the end of it" for north hemisphere.

"the start of daylight saving month > the end of it" for south hemisphere.

Note2) In case daylight saving time is set to AM0:00, daylight saving is switched at AM1:00.

Note3) In case current month, day, time are changed during daylight saving period, current time becomes not correct. In such case, set current month, day, time again.

Note4) In case the month of start and end daylight saving are same, set start day < end day.

### 3) Set current date time

Set [A001], [A002], [A003] to "Year", "Month, Date", "Hour, Minute".

Then set [A004] to "1". At this very moment, current time is changed to [A001] – [A003].

In case only time should be corrected, set [A003] to correct value, and set [A001], and [A002] to 0 (default value).

Note1) It is not possible to set the time to 0:00 (AM.0:00).

■ **Set calendar function**

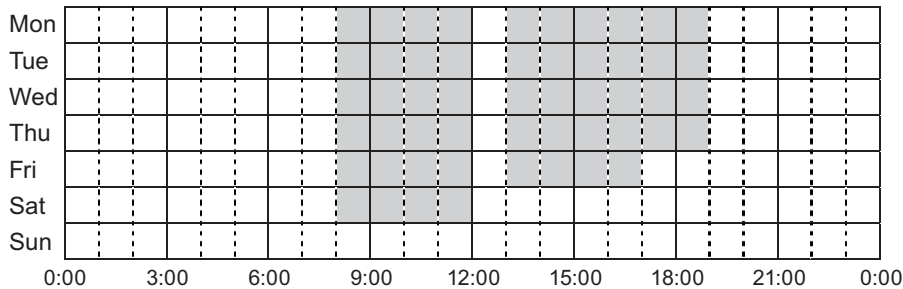
1) **Set calendar function**

Calendar function is the scheduling function that login output status follows to the parameter of 4 sets of start day of the week, hour, minute; 3 sets of end hour, minute; and 1 set of end day of the week, hour minute.

Function No.	Output terminal function	Action
194/195	Calendar 1	ON at a fixed day of the week by set [A020] to [A022]. When [A020]="+128", ON at only next fixed day of the week.
196/197	Calendar 2	ON at a fixed day of the week by set [A023] to [A025]. When [A023]="+128", ON at only next fixed day of the week.
198/199	Calendar 3	ON at a fixed day of the week by set [A026] to [A028]. When [A026]="+128", ON at only next fixed day of the week.
200/201	Calendar 4	ON at a fixed day of the week, time and OFF at a fixed day of the week, time by set [A029] to [A031]. When [A029]="+100", ON and OFF at only next fixed day of the week.

● **Example 1**

There is a system that should be operated at 8:00–12:00, 13:00–19:00 from Monday to Thursday, 8:00–12:00, 13:00–17:00 for Friday, 8:00–12:00 for Saturday.



1. "194: Calendar 1" is ON at 8:00–12:00 from Mon. to Sat. Set [A020]="63", [A021]="8.00", [A022]="12.00".

[A020] = 1+2+4+8+16+32 = 63	[A021] = 8.00	[A022] = 12.00
Calendar1 Mon - Sat	Start1 8:00	end1 12:00

2. "196: Calendar 2" is ON at 13:00–19:00 from Mon. to Thu. Set [A023]="15", [A024]="13.00", [A025]="17.00".

[A023] = 1+2+4+8 = 15	[A024] = 13.00	[A025] = 19.00
Calendar2 Mon - Thu	Start2 13:00	End2 19:00

3. "198: Calendar 3" is ON at 13:00–17:00 for Fri. Set [A026]="16", [A027]="13.00", [A028]="17.00".

[A026] = 16	[A027] = 13.00	[A028] = 17.00
Calendar3 Fri	Start3 13:00	End3 17:00

4. Output terminal functions: Set [F133]="194", [F138]="196", [F139]="1" or "3", [F134]="198".

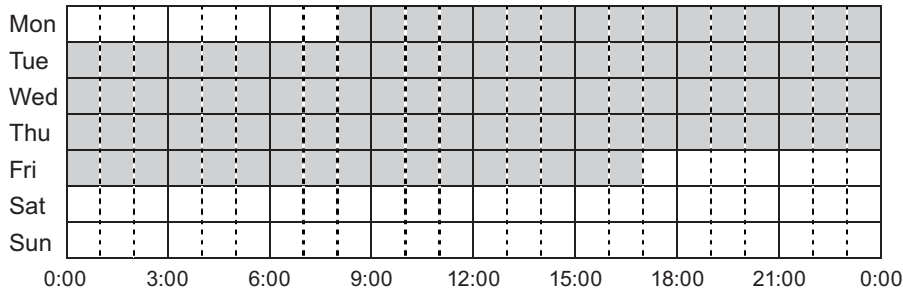
```
[F133] = 194      [F138] = 196      [F139] = 1 or 3
Terminal [R1]   Calendar1   Calendar2 OR output

[F134] = 198
Terminal [R2]   Calendar3
```

Connect the wire the system works by the OR signal of these 3 outputs.

• **Example 2**

There is a system that should be operated from 8:00 on Monday to 17:00 on Friday.



1. "200: Calendar 4" is ON from 8:00 Mon. to 17:00 Fri. Set [A029]="0.15", [A030]="8.00", [A031]="17.00".

```
[A029] = 0.15      [A030] = 8.00      [A031] = 17.00
Calendar4   Mon - Fri   Start4   8:00      End4   12:00
```

2. Output terminal functions: Set [F133]="200".

```
[F133] = 200
Terminal [R1]   Calendar4
```

3. Connect the wire the system works by the output.

**2) Set holiday**

20 holidays can be set in Calendar function. When holiday is set, calendar output is always OFF during holiday.

10 holidays are set by [A040] to [A050]. Month and Date can be set.

Other 10 holidays are set by [A060] to [A070]. Week number and Day of the week can be set.

Calendar output is always OFF during the day set by these holiday parameters.

• **Example 1**

Jan 1<sup>st</sup>, March 21<sup>st</sup>, September 23<sup>rd</sup> are set to holiday.

Set [A040]="7", [A041]="1.01", [A042]="3.21", [A043]="9.23".

```
[A040] = 1+2+4 = 7      [A041] = 1.01      [A042] = 3.21      [A043] = 9.23
HD 1 enabled   enabled1,2,3   Holiday Month, Date1   Holiday Month, Date2   Holiday Month, Date3
```



• **Example 2**

**1 week (Monday to Saturday) of WK34 is set to holiday.**

Set [A060]="1", [A061]="34.16".

[A060] = 1 HD 2 enabled    enabled only 1	[A061] = 34.16 Holiday week 1    Week34, Mon. to Sat.
--	--

**3) Week number of ISO 8601**

ISO8601 defines week number and weekday as below.

- The week which includes first Thursday of the year is defined to WK01, and last year is WK52 or WK53.
- The beginning of the week is defined to Monday numbered 1, and the end of the week is defined to Sunday numbered 7.

The parameter setting basically follows to ISO 8601, but there are some exceptions as below.

**Exception of the week number setting**

**12** December, 2014

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

WK52

Set WK53 (normally WK01)

**1** January, 2015

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

WK01

**12** December, 2015

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

WK53

**1** January, 2016

Mon	Tue	Wed	Thu	Fri	Sat	Sun
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Set WK00 (normally WK53)

WK01

**4) [E-44] Trip: Battery of panel failure**

When Operation panel is not connected at power on, or RTC is not correctly working (due to lack of battery voltage) during calendar function is activated, [E-44] trip occurs.

In such case, make sure connection of the operation panel and battery voltage, then reset the trip. After reset the trip, make sure the current date time. When the date time is not correct, set again.

