General Specifications

DT500 Retransmission Modules

DARWIN

GS 04M01E01-50E

■ xRefer to the following cautionary notes before you configure your system.

DARWIN is a system comprising a number of data-acquisition equipment components.

In the course of system growth, new models, software, various input/output modules, and optional features are added to the family to enhance the systems expandability and flexibility. You can check the versions of your equipment by referring to the style number shown on the nameplate of the main unit, and software package, by referring to its release number. When configuring a system, you must confirm that the style number of each component, and release number of each software package, meets the following requirements:

- The style number of each input/output module must be the same as or lower than that of the main unit or sub-unit to which the module is connected.
- The release number of a dedicated software package must be the same as or higher than the style number of the main unit or sub-unit where the package is installed and where it performs control.

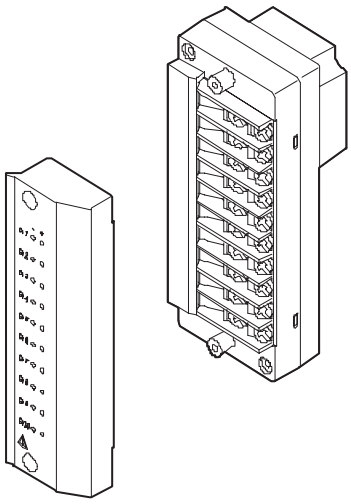
Any equipment/software not meeting these requirements is incompatible with your system configuration. For information on how to upgrade to compatible equipment/software, consult our sales personnel.

■ Model and Suffix Codes

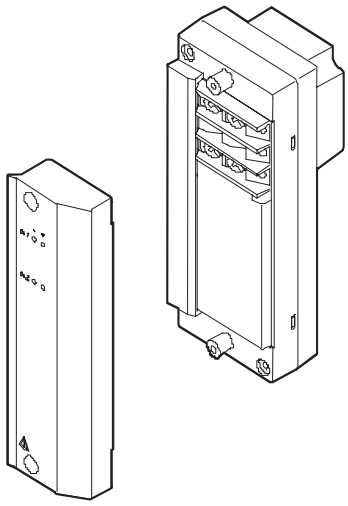
Model	Module	Output Signal	Number of Channels	Style Number
DT500-11	Retransmission Module	1-5V	10	S10
DT500-21		4-20mA	2	S10

■ Overview

The DT500-11 and DT500-21 Retransmission modules deal with data that are measured or computed by the DARWIN series, or set by a personal computer via a communication interface. The modules convert them to 1-5 V analog voltage or 4-20 mA analog current signals for output.



DT500-11 1-5 V Retransmission Module



DT500-21 4-20 mA Retransmission Module

GS 04M01E01-50E

3rd Edition: February 2004 (YG)

■ Main Specifications

	DT500–11	DT500–21
Applicable instruments	Both stand-alone and expandable models of DA100 and DC100. With expandable models, the module can only be installed in the sub-unit DS400 or DS600. Note 1	
Maximum number of connectable modules	30 (Max. 4: Standalone Models)	
Number of channels	10	2
Terminal type	Screw	
Output signal	1-5 V DC Note 2	4-20 mA DC Note 2
Output range	0.8-5.4 V DC (–5% to +110% of span)	3.2-21.6 mA DC (–5% to +110% of span)
Load resistance	10kΩmin.	600Ωmax.
Output accuracy	±0.2% of span	±0.2% of span
Temperature coefficient	0.01% of span/°C	0.01% of span/°C
Maximum resolution	12 bits (approx. 1.46 mV)	12 bits (about 5.86 µA)
Update period	Same as the measurement period Note 3	
Output for SKIP	0.05 V max.	0.15 mA max.

Note1: A retransmission module must be installed on the left side of the input module. It can also be specified as an option for expandable models of the DR series recorder. However, stand-alone models are not applicable.
Note2: Output signals do not support control output signals for mode control.
Note3: Update may not be completed within the measurement period, depending on the number of modules installed, computations performed, and the state of external media.

■ General Specifications

Ambient temperature: 0°C-50°C

Ambient humidity: 20-80% RH at 0°C -40°C; 10-50% RH at 40°C -50°C (no condensation).

Insulation resistance: Between output terminals and ground: 20 MΩ min. (500 V DC)

Withstanding voltage: Between output terminals and ground: 500 V DC for one minute.

Isolated between channels:

DT500-11: Potential with reference to the shared voltage of the COMMON Line with in the same module.
DT500-21: Each channel mutually isolated, 500 V DC for one minute.

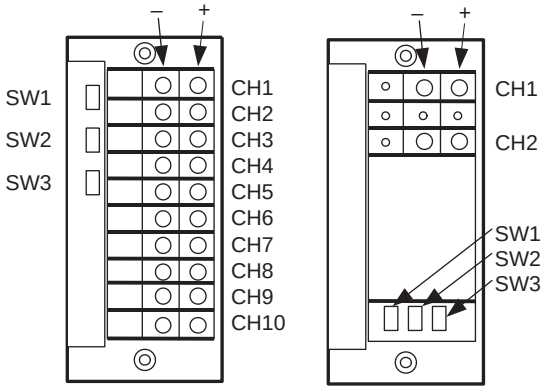
Power consumption: The main unit or sub-unit includes the power consumption of the module.

External dimensions: Approximately 57 (W) X 137 (H) X 68 (D) mm

Weight:

DT500-11: Approx. 0.35 kg
DT500-21: Approx. 0.3 kg

Terminal:



DT500-11 DT500-21

■ Functional Specifications

Output range: –5% to 110%

Output data: Converts data from a measurement channel (□□□), computation channel (A□□), or communication input channel (c□□uu), to 1-5 V or 4-20 mA signals and outputs them.

Output filter: First-order lag filter in 10 levels can be set for changes of measurement data, computation data, or communication inputs. The time constant is approximately 8 ms to 4 sec.

Overrange: –OVER: Minimum data of –5% of the span can be output.
+OVER: Maximum data of +110% of span can be output.

Output setting: The output data can be switched by setting the DIP switches, as shown in the table below.

SW1	SW2	SW3	Output Data	Output Value
OFF	OFF	Not used.	ZERO	Approx. 0 V (less than 0.05 V) or 0 mA (less than 0.15 mA)
ON	OFF	Not used.	–OVER	–5% (0.8 V or 3.2 mA)
OFF	ON	Not used.	+OVER	+110% (5.4 V or 21.6 mA)
ON	ON	Not used.	Latest me asured data	Latest normal value

Output method: Depends on the Retransmission source. The Retransmission source channel must be specified as a setting parameter for each output channel as follows.

Measurement channel: Specify the channel (□□□). The output data range of 0-100% corresponds to the span of the channel.

Computation channel: Specify the channel (A□□). The output data range of 0-100% corresponds to the span of the channel.

Communication input channel: Specify the channel (C□□). The output data range of 0-100% corresponds to the fixed span 0-10,000 of the channel.

Note: Although the span of the communication input channel is fixed to 0-10,000, there is a difference between the following two cases:
- When a communication input channel is specified as a data source.
- When the communication input channel is used as a computation channel and the computation channel is specified as a data source. In this case, A□□ = C□□uu.
  For example, when the communication input channel is C01, the computation channel is A01, and the span is 0-1000:
- When the communication input channel is specified as a data source:
  The output channel is C01 and outputs 1000 as 10% (1000/10,000).
- When the communication input channel is used as the computation channel and the computation channel is specified as a data source:
  The output channel is C01 = A01 and outputs 1000 as 100% (1000/1000).

Output on occurrence of an error:

- When there is an error in the measurement channel allocated to the module (e.g., the module is not installed or recognized):
  Outputs one of the following preset DIP switch settings:
  - Previous measured data: measured data before the error occurrence
  - –OVER: –5%
  - +OVER: +110%
  - ZERO (Approx. 0 V or 0 mA)

- When there is an error in the computation channel allocated to the module as well as the measurement channel allocated to the computation channel:
  Outputs either +OVER or –OVER according to the MATH ERROR setting of the setup mode for the DA100 or DC100 main unit.

- When there is a thermocouple (TC) burn out:
  Outputs either a BURN UP or BURN DOWN value according to the burn out setting of the setup mode for the DA100 or DC100 main unit.

- When there is a failure (e.g., the module cannot communicate with the DA100 or DC100 main unit, or the main unit cannot communicate with a sub-unit):
  Outputs one of the following preset DIP switch settings after a time-out occurs:
  - Previous measured data: Measured data before the error occurrence
  - –OVER: –5%
  - +OVER: +110%
  - ZERO (Approx. 0 V or 0 mA)

Measurment Period	0.5 - 1 sec.	2 - 5 sec.	6 - 10 sec.	More than 11 sec.
Time-out	Approx. 4sec	Approx. 16sec	Approx.32sec	Approx. 64sec

■ Application Examples

● Distribution of TC/RTD Input

- When distributing TC/RTD input signals, a converter or double element TC has been generally used. With the Retransmission module, you can convert the TC/RTD input signals to DC voltage or current and re-output them. You can collect the TC/RTD input signals while using output signals from the module as input signals for other indicators. This leads to reductions in the costs of engineering and instrumentation.

- For ISO-certified plants and factories, it is necessary to prove traceability, or gain a calibration certificate for industrial equipment used in the production processes. With the conventional method, voltages of TC/RTD input signals were transferred by the converter and distributed. This requires users to prove traceability for every converter connected. One converter is necessary for one channel. Thus, the larger the number of channels, the greater the procedures and cost for traceability. On the other hand, the Retransmission module allows you to gain a certificate per module.

● Retransmission output of Computation Data

- The conventional method requires a personal computer to display the output signals of computed data on screen. This is not the case for the analog output module. You can directly output the integrated, maximum, and minimum value of input signals to analog and digital indicators on the panel. (Note that with this application, you are required to specify the optional code /M1 for the computation function of the main unit).

● Back up for Collected Data

- When the DA100 is used as the measurement block of a distributed control system (DCS), the DCS can collect data by connecting to the DA100 via a communication interface. The Retransmission module connected to the DA100 transfers the collected data to a DAQSTATION, which can back up the data using its memory function.