

JAT Technical Translation Seminar

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1. Why Make the Effort to Study Electronic Hardware?

Almost all J-E translations in electronics are *industrial-product related* and require some field-specific knowledge of electronic hardware. Consumer electronics represents an *almost* negligible portion of the total J-E translation market. It is this mix that makes electronics and hardware knowledge essential.

2. The TER Ratio (翻訳対輸出比)

The high visibility of consumer electronics translation is deceiving for two good reasons:

- The sources of translation work for translators in general and for non-Japanese translator in particular are often printing- and design-intensive operations who actively seek customers that can generate work producing slick catalogs--i.e., consumer-product manufacturers.
- The inherent documentation requirements for industrial products are much higher than for that of consumer products.

Let us look at the Japan's electronics exports for the last several years (excluding the parts sector, which requires very little translation).

単位: 億円

年	産業用 機器		民生用 機器	
	生産	輸出	生産	輸出
1984	60,041	24,573	47,190	33,063
1985	69,264	27,213	49,351	35,190
1986	74,356	26,908	42,602	26,013

Source: 電波新聞 62年6月1日

It can be seen that, whereas consumer products have shown a drop, industrial products are holding their own. Also note that industrial-product exports now exceed those of consumer products. What, however,

is even more significant is the huge amount of translation work associated with industrial products, when compared with consumer products. Looking at the figures above, one might assume that consumer products represent about one-half the translation work available. Such is definitely not the case.

I propose that a good measure of *translation-intensiveness* would be the ratio of pages of translation work (and this, of course, almost always means at least J-E translation) required to support a "unit" of exports (e.g., pages per *oku* yen of exports). This *TER* (translation-to-export ratio)--could then be used as a measure of the importance to the translator (and translation company) of a particular prospective client, industrial sector or field of translation.

Let us examine how the TER would describe the two areas of interest--consumer and industrial products.

Industrial Product Example

Small production runs (and sometimes even one-off specials) of complex products are common in industrial products. Consider a product that costs ¥ 800,000 and requires a user manual of 200 pages (quite commonly encountered). The manufacturer would be very happy to sell 500 units of this highly specialized product overseas. Let's do the calculations.

$$\begin{aligned} \text{TER} &= (200 \text{ pages}) / (500) \times (\text{¥ } 800,000) \\ &= 200 \text{ pages} / \text{¥ } 4 \text{ oku} \\ &= \mathbf{50} \text{ pages} / \text{¥ } \text{oku} \end{aligned}$$

Consumer Product Example

High production runs of simpler products are common in consumer electronics. One-off specials are unthinkable. Take the example of a TV receiver with a price tag of ¥ 100,000 aimed at export sales of 15,000 units. The product must be described in a simple manual of 60 pages.

$$\begin{aligned} \text{TER} &= (60 \text{ pages}) / (15,000) \times (\text{¥ } 100,000) \\ &= 60 \text{ pages} / \text{¥ } 15 \text{ oku} \end{aligned}$$

= **4** pages/ ¥ oku

A small translation firm in Tokyo recently did a mini-survey of its clients and determined that the TER for five typical large clients (manufacturers of industrial electronics products) ranged from 45 to 125 pages/¥ oku. The results of this study indicate, then, that consumer electronics represents no more than 10% of the electronics-related translation market.

When we look at absolute market size, we find that using even a reasonably conservative TER of 40 yields a yearly market demand of just over a million pages--or over 4000 pages per day of industrial-electronics translation, enough to satisfy most JAT members, I would think.

3. What this Means to the Translator

Industrial product translators require the translator to be able to wade through hardware terminology that they don't even teach to electrical engineering students in universities. It must be learned in the field. This actually puts the budding translator with the will to learn on at least more even if not even ground with the engineer just out of school.

The reason many prospective clients shy away from translators and translation companies is that their experiences have taught them that these people just don't have what it takes to master the terminology. The translator capable of mastering the language of electronics can draw out latent demand for translation that can make the above-mentioned TER figures for industrial electronics soar even higher--the result being more money to buy and enjoy consumer products, or whatever else turns you on.

4. Qualifications

Having an engineering degree is no guarantee of being able to translate electronics well and not having one is less of a handicap than many "non-technical" types feel. What is required is a feel for jargon, the ability to know when you are 'faking' it and the willingness to invest time in studying terminology that is probably useful to you only in translation.

The remainder of the materials presented here includes the handout problem solutions (mostly related to style and sloppy writing) and a quick spin through the land of electronics hardware, focusing on parts terminology that presents problems to J-E translators.

4. Handout Solutions

Group 1 (Typography)

1-1 湿度: 10 ~ 85% RH

- There is no such symbol as ~ in English to indicate a range of values. The word *to* or a hyphen should be used, the former being preferred to avoid confusion with negative values.
- Nobody ever specifies humidity in absolute terms in specifications. Therefore, the RH (for relative humidity) adds no information to the expression and can, therefore, be omitted.

1-2 設定範囲: 0 ~ 1000mmHg / 0 ~ 100%

- Same as 1-1 re ~
- The slash (/) here indicates that the setting range of 0 to 100% corresponds to the pressure range of 0 to 1000 mmHg (note space separating the unit abbreviation), yielding: 0 to 100%, corresponding to 0 to 1000 mmHg.

1-3 制御制度: ±0.5% F.S

- The Japanese manuscript had 制度 for the obviously intended 精度. This type of word-processor error is becoming common.
- Typical Japanese misuse of a single period as a divider in an abbreviation. This one can be made *FS* or *fs* for full scale.
- The expression could be rendered as ±0.5 of fs ; attempting to leave it as in the Japanese leaves the reader with jaw open.

1-4 スピード: 0.3 sec / 90 deg.

- Speed should be expressed as (something) per unit time. The above is the reverse and requires that either *speed* or the right side of the expression be changed. One possibility is to flip the latter around to make: 90 deg/0.3 s
- The abbreviation for seconds has been *s* for years.

- In the SI system, periods are not used after abbreviated units and the unit abbreviation should be separated from the associated value by a space.

1-5 トルクスイッチ: 30 ~ 100 kg·cm ADJ可能

- Same as 1-1 above re ~.
- ADJ is used here as Japanese written in Roman typography. It could have been expressed as 可変 just as well. One correct rendering would be: 30 to 100 kg·cm (adjustable)

1-6 ケーブル断線: →修理

- Here the → is used to mean なら or の場合は. One solution to the problem is to reformat the material in a table with column titles such as *Problem* (in this case, open cable) and *Correction* (in this case, repair).

1-7 AC220V ± 10%

单相 60Hz 約5KVA

- AC220V is derived from the Japanese word order of 交流220ボルト. There is a tendency to use lower case *ac* these days, and one appropriate rendering would be:

220 Vac, ± 10%

Single phase, 60 Hz, approx. 5 kVA

(Note correction to *kVA* and separation of units' abbreviations.)

1-8 外径: ∅ 30 MAX.

- 外径 already means outer diameter, making the European symbol ∅ confusing and incorrect.
- Incorrect capitalization of MAX. needs fixing.

Outer diameter: 30 max.

1-9 CR 発振器を用意して下さい。

- The order is always RC (resistance-capacitance) in English with CR bizarre at best.
- Nobody is preparing anything here. The RC oscillator was “prepared” at the factory. All this sentence says is that an RC oscillator is required for whatever is being done (the context governing how this gets translated, of course).

1-10 TP2グラウンド間の電圧を確認する。

- The reader may or may not know that TP2 and ground are separate entities. If the translator doesn't, however, confusion may result.

Check the voltage between TP2 and ground.

Group 2 (Sloppy Writing)

2-1 外形寸法は367 × 407 × 120 MM³、重量が6kg。

- This is a commonly seen bit of nonsense. The reader doesn't care what the volume of the widget is in units of mm^3 . The important thing is the linear dimensions.

Outer dimensions: 367 × 407 × 120 mm

Weight: _____ Approx. 6 kg

2-2 5.25インチ(直径130MM)の追記型光ディスク

- There is no real need to use the word for diameter. Disk sizes are always referred to by diameter. The 直径 here adds little information.

5.25-in. (130-mm) write-once, read-many disk

or

5.25-in. (130-mm) WORM disk

2-3 実行したいMENUを選択して下さい。

- Nobody has told the author that a *menu* has *items* -- not other menus, although selecting an item often causes another menu to appear.

Select the menu item to be executed.

or (more precisely, but unwieldy)

Select the menu item corresponding to the function to be executed.

2-4 湿度範囲: 85%RH以下

- The right side is not a range. Possible solutions are:

Humidity range: 0 to 85%

Maximum humidity: 85%

The first choice here is not altogether silly in starting the range at 0%; there are some devices which are not designed to operate at 0% humidity.

2-5 データ伝送速度は20 MS/ワードです。

- This is similar to the problem of 1-4; possible solution is:

Data transmission time: 20 ms/word

2-6 垂直軸精度は1%以下です。

- Translating this as1% or less sounds like the accuracy might not be as good as 1%.

Vertical-axis accuracy: 1% or better

or

Vertical-axis accuracy: 1%

The *better* is not strictly required, since an accuracy of 1% implies that the accuracy is assured to be 1% but may, in fact, be better.

2-7 品質テストインターバルは最低6ヶ月に一度とする。

- Same type of problem as 2-6. The 最低 modifies the act of performing the test, not on the interval. One solution:

Perform quality tests at intervals of no greater than 6 months.

2-8 最高分解能: 3 nsec

- A smaller value of resolution is better than a larger value, making a direct translation of the above confusing.

Resolution: Down to 3 ns

Careful reflection might lead one to the conclusion that the 最高 in the Japanese wasn't really needed, especially if the resolution is always 3 ns, in which case the *Down to* can be discarded.

2-9 輝度調整器で通常再調整する必要はない。

- This sentence seems to be missing some punctuation (perhaps 「 、 」 after で). As is, it might be translated as:

Readjustment using the intensity adjustment is not normally required.

This implies that readjustment by some other means might be required or, at least, possible.

The sentence, however, should have read 輝度調整器で、通常再調整する必要はない, yielding:

This is the intensity adjustment; it does not normally require require readjustment.

2-10 今回のシステムは4WD車対応も出来るようになっていきます。

- Context is important here. In this case, there was a series of systems contemplated by the author, the *subject system being designed to handle 4-wheel-drive vehicles.*

Group 3 (Misinformation)

3-1 液体窒素(沸点77°K)による冷却で動作するジョセフソン素子

- There is no such thing as a Kelvin degree! This error will become more common as the chic field of superconductivity works its way into the hearts of non-technical buzzword coiners.

A Josephson junction device that operate under liquid-nitrogen (boiling point 77K) cooling.

- Note also that this section has only one subsection, 3-1! Watch for this in Japanese manuscripts; its common and seems to be almost acceptable (in Japanese, that is). Reorganization is usually required to solve this problem.
- It might be noted that *degree* is not even a unit. It is the distance between two point on a temperature *scale*. The temperature scale is a measure of hotness--not of heat. To express the amount of heat that a material possesses, the quality of specific heat must be considered. End of Physics 101 for now.

Group 4 (Misc.)

4-1 耐久シミュレート装置

- Parts of speech are a problem for the Japanese author using *katakana* terminology. Here we should have:

Endurance simulation system

4-2 ディスク回転数は875 RPM。

- Since rpm is rotational a speed already, we should simply have:

The disk speed is 875 rpm.

(rather than the sometimes seen *The disk's rotational speed is 875 rpm* or, even worse, *The disk's rpm is 875 rpm.*)

4-3 実行したいMENUを選択して下さい。

- (2-3のダブリで、読者の皆様に深くお詫びを申し上げます。)

4-4 塗装色

パネル面: 御指定色

- Who said *keigo* is never seen in technical translation? Here it used to convey substantial information, i.e. who is doing the specifying.

Panel color: User specified

4-5 シールド線を使用して下さい。

- Another part-of-speech problem.

Use shielded wire.

5. Hardware Problems

Many of the problems that translators encounter in J-E electronics translations are caused by lack of command of the basic terminology used for electronic hardware, component names in particular being a rough area. This section will provide a glimpse at some typical problems, but is in no way comprehensive in coverage.

5.1 Connectors, Terminals and Pins

Since most translators have never seen these components, the fact that single terms in Japanese have a multitude of possible English translations is a particularly nasty problem. Probably the most difficult single term in this area is 端子. It can be used to mean any of the following.

- terminal (e.g., on a printed-circuit board, terminal strip or a panel)
- pin (e.g., of a connector)
- lead (e.g., of an IC or other component that has lead wires)
- connector (usually in the case in which the connector is a single-signal or single-function connector--for example, an external trigger connector as 外部トリガコネクタ)
- finger (of a board-edge connector)

Another term used for connector is 接栓, although this smacks to me of being somewhat dated. The term 接栓 can be used for the following.

- connector (e.g., on a panel)
- terminal (e.g., on a panel)

It is not likely to be used for pin or lead, however. Oddly enough, the loanword コネクタ is usually used unambiguously and can usually be trusted to be renderable as *connector* in English.

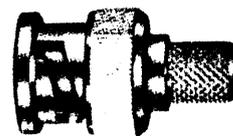
Often the Japanese will tout a product as having a "×× connector" (e.g., an external trigger connector). The connector is just the means to the end of external triggering, so this should be translated as external triggering (function).

No discussion of connectors would be complete without a mention of the amazing letter *P*. The Japanese author often uses this to indicate the *pin* of a connector. Under no circumstances should 36P (コネクタ) be assumed to be ok in English, however; this should be rendered as *36-pin (connector)*. An extension of this is the use of *P* to indicate *conductor* (of a cable). Where the author should have said is something like 36芯ケーブル, we sometimes find 36P ケーブル, presumably because it might be terminated with 36-pin (36P in Japanese) connectors.

While we are on the subject of 芯, it is sad to note that even the *Inter Press Dictionary of Science and Engineering* misses *conductor* (the only reasonable translation if we are talking about the wires inside a multiconductor cable) for the single *kanji* 芯, but does include the term 心 as *core*, the almost universal mistranslation of this term. This error gives *epoch making* a run for its money in the Olympics of mistranslation. Giving due credit, they do include 芯線 and its possible translations of *conductor*, *core* and *core wire*. When discussing an actual individual conductor wire or the material thereof, 芯線 will be encountered. It is almost always abbreviated to 芯, however, when calling out the number of conductors in a cable.

Next, let's look at some illustrations of what should be called connectors and terminals.

BNC Connectors
(BNC コネクタ)



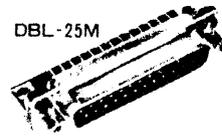
Binding posts

(端子. The Japanese seldom is more specific than this.)



D-sub miniature connectors

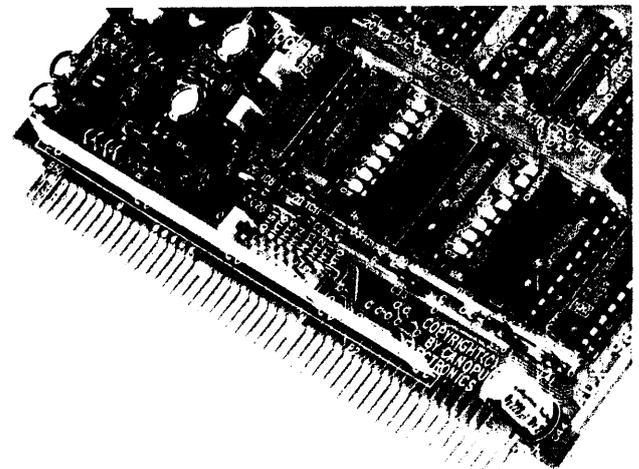
(D-subミニコネクタ)



DBL-25F
*ロサンゼルスオリンピック
公式採用!

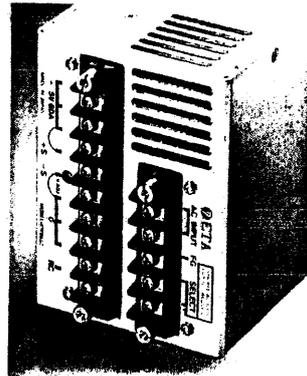
Board-edge connector

(ボード・エッジ・コネクタ)



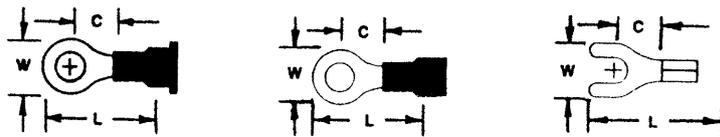
Terminal strips

(端子台)



Crimp-on terminals

(圧着端子)



5.2 Switches

How many J-E translators know why a DIP switch (it must be capitalized this way) is called a DIP switch. How many of them think that it has something to do with “dipping?” I have seen this written in lower case, indicating that such a misconception had occurred. The animal, in fact, gets its name from the fact that it is housed in what is termed a dual in-line package (i.e., DIP), the same package that houses most ICs.

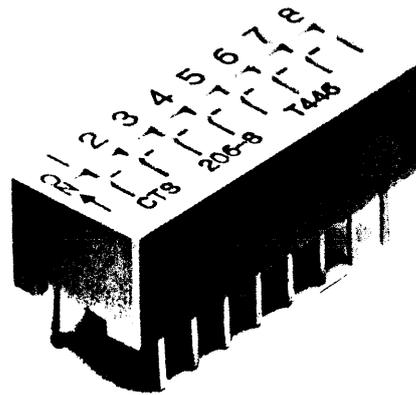
Another problem is デジスイッチ, with its not-so-elegant rendering of digiswitch, an expression completely alien to the native-English reading/writing engineer. This is a *thumbwheel* switch, because individual digits can be changed by turning a wheel using the thumb, or any other *digit* you care to use. No, the *digi* of digiswitch didn't get there that way. It is there because this switch enables individual digits to be changed. Color it *thumbwheel*. Now that I have straightened this one out, I hesitate to mention that some of the switches that enable individual digit settings can now be changed by pressing buttons at the top and bottom of each of these digits. They are still, however, call thumbwheel switches, I guess for historic or sentimental reasons.

DIP switch

(DIPスイッチ

or

ディップ・スイッチ)

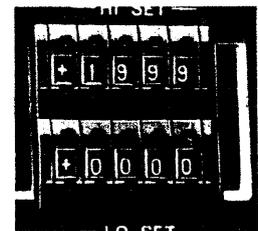
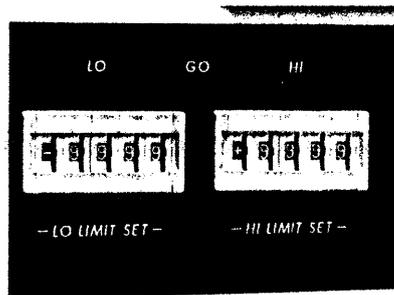


Thumbwheel switches

(デジスイッチ

or

デジスイッチ)



5.3 Adjustments

A classic problem for the translator, whether apparent or hidden, is the famous 半固定抵抗器, which some translators attempt to render as *half-fixed* or *semifixed resistor*. The half part of this derives from the fact that it is a *trimmer potentiometer*, or simply *trimmer*, that is not adjusted or changed very often. It is often out of sight within a piece of equipment (e.g., mounted on a PC board) but may be accessible from a front panel through an adjustment access hole. I imagine this 6-kanji compound was coined in that fateful period of Japanese history we might term ハイテク夜明前, in which Japanese were frantically trying to describe Western technology with *kanji* compounds, much as Western ideas had to be expressed in newly coined compounds. Luckily (?) the Japanese have progressed to using *katakana* and even English letters (if not English). The result is that all these dated terms will, I hope, eventually go out of use. In this case, トリマー is gaining popularity with Japanese authors. Regardless of its origin, this term should be translated as *trimmer*, but

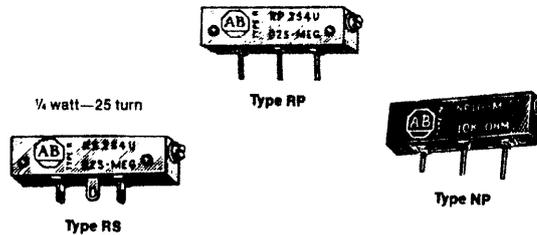
can be translated as trimmer pot (for potentiometer), a commonly heard engineer's term for this ubiquitous component.

Trimmers

(半固定抵抗器

or

トリマー)



Another problem plaguing translators is that of ポリユーム. This is the generic Japanese term for potentiometer and can be found used for trimmers and for potentiometers mounted on front panels and intended for more-frequent adjustment. The origin is that fact that potentiometers are used as volume controls in audio equipment, but that specific usage has been overshadowed by the universal generic use of the term. When the translator encounters this term, the only thing to do is to look for the part in drawings to determine its location and to determine whether or not *trimmer* might not be better than *potentiometer*. In cases where the part is mounted to a front panel, expressions such as 出力電圧ポリユーム should probably be rendered with something like *output voltage adjustment*, rather than output voltage potentiometer, especially if the reader is a user of the product. To the user, the function of the adjustment is more important than what is behind the knob on the other side of the front panel.

The above has been but a brief introduction to just a few hardware problems. A more comprehensive survey is presented in the publication *Essential Electronics for J-E Translations*, which is good news for the translator. The bad news is that the publication has yet to be written--or even started. Anyone having ideas on problem areas which might be covered in this publication are welcome to refer them to:

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